



Service Manual

Service Manual

GS155



Model : GS155



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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

1. INTRODUCTION

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the sign. Following information is ESD handling:



- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current – Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIO	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

1. INTRODUCTION

PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Lithium-ion r, 3.7V 950mAh	
Stand by TIME	Up to 720 hrs : Paging Period 9, RSSI 85dBm	
Talk time	Up to 600 min : GSM Tx Level 10	
Charging time	Approx. 4 hours	
RX Sensitivity	GSM, EGSM: -108dBm, DCS: -108dBm	
TX output power	GSM, EGSM: 32.5dBm(Level 5), DCS , PCS: 29.5dBm(Level 0)	
GPRS compatibility	Not Support	
SIM card type	3V Small	
Display	MAIN : 1.52" TFT 128 x 160	
Status Indicator	Hard icons. Key Pad 0 ~ 9, #, *, Up/Down Left/Right Navigation Key Send Key, PWR Key ,Soft Key(Left/Right)	
ANT	Internal	
EAR Phone Jack	Yes	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Not Support	
Microphone	Yes	

2. PERFORMANCE

Item	Feature	Comment
Speaker/Receiver	18x12Φ Speaker/ Receiver	
Travel Adapter	Yes	
MIDI	32 poly	
Camera	Yes	
FM Radio	87~108MHz supported	

2.2 Technical Specification

Item	Description	Specification					
1	Frequency Band	EGSM TX: 880 ~ 915MHz RX: 925 ~ 960 MHz DCS TX: 1710 ~ 1785 MHz RX: 1805 ~ 1880 MHz					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1 ppm					
4	Power Level	GSM850/EGSM					
		Level	Power	Toler.	Level	Power	Toler.
		5	33dBm	±2dB	13	17dBm	± 3dB
		6	31dBm	±3dB	14	15dBm	± 3dB
		7	29dBm	±3dB	15	13dBm	± 3dB
		8	27dBm	±3dB	16	11dBm	± 5dB
		9	25dBm	±3dB	17	9dBm	± 5dB
		10	23dBm	±3dB	18	7dBm	± 5dB
		11	21dBm	±3dB	19	5dBm	± 5dB
		12	19dBm	±3dB			
		DCS/PCS					
		Level	Power	Toler.	Level	Power	Toler.
		0	30dBm	±2dB	8	14dBm	± 3dB
		1	28dBm	±3dB	9	12dBm	± 4dB
		2	26dBm	±3dB	10	10dBm	± 4dB
		3	24dBm	±3dB	11	8dBm	± 4dB
		4	22dBm	±3dB	12	6dBm	± 4dB
		5	20dBm	±3dB	13	4dBm	± 4dB
		6	18dBm	±3dB	14	2dBm	± 5dB
		7	16dBm	±3dB	15	0dBm	± 5dB

2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	GSM850/ EGSM	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		DCS/PCS	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	GSM850/ EGSM	
		Offset from Carrier (kHz).	Max. dBm
		400	-19
		600	-21
		1,200	-21
		1,800	-24

2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	DCS/PCS		
		Offset from Carrier (kHz).		Max. dBm
		400		-22
		600		-24
		1,200		-24
		1,800		-27
7	Spurious Emissions	Conduction, Emission Status		
8	Bit Error Ratio	GSM850, EGSM BER (Class II) < 2.439% @-102 dBm DCS,PCS BER (Class II) < 2.439% @-100 dBm		
9	RX Level Report Accuracy	±3 dB		
10	SLR	13±4 dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	2±3 dB		

2. PERFORMANCE

Item	Description	Specification		
		Frequency (Hz)	Max.(dB)	Min.(dB)
13	Receiving Response	100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		
14	STMR	≥ 17 dB		
15	Stability Margin	> 6 dB		
16	System frequency (13 MHz) tolerance	≤ 2.5 ppm		
17	32.768KHz tolerance	≤ 30 ppm		
18	Ringer Volume	At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm		
19	Charge Current	Fast Charge : Typ. 410 mA Total Charging Time : < 3.5 hours		

2. PERFORMANCE

Item	Description	Specification	
20	Antenna Display	Bar Number	Power
		5	-92 ± 2
		5 -> 4	-93 ± 2
		4 -> 2	-101 ± 2
		2 -> 1	-104 ± 2
		1 -> 0	-106 ± 2
21	Battery Indicator	Battery Bar Number	Voltage
		3	$> 3.75 \pm 0.05 \text{ V}$
		3 -> 2	$3.75 \pm 0.05 \text{ V}$
		2 -> 1	$3.67 \pm 0.05 \text{ V}$
		1 -> 0	$3.6 \pm 0.05 \text{ V}$
22	Low Voltage Warning (Blinking Bar)	Once per 1 minute (Receiver)	
		Once per 3 minute (Speaker)	
23	Forced shut down Voltage	$3.3 \pm 0.05 \text{ V}$	
24	Battery Type	Lithium-Ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 950mAh	
25	Travel Charger	Switching-mode charger Input: 100 ~ 240V, 50/60 Hz Output: 4.8 V, 400 mA	

3. TECHNICAL BRIEF

3. TECHNICAL BRIEF

3.1 Digital Main Processor

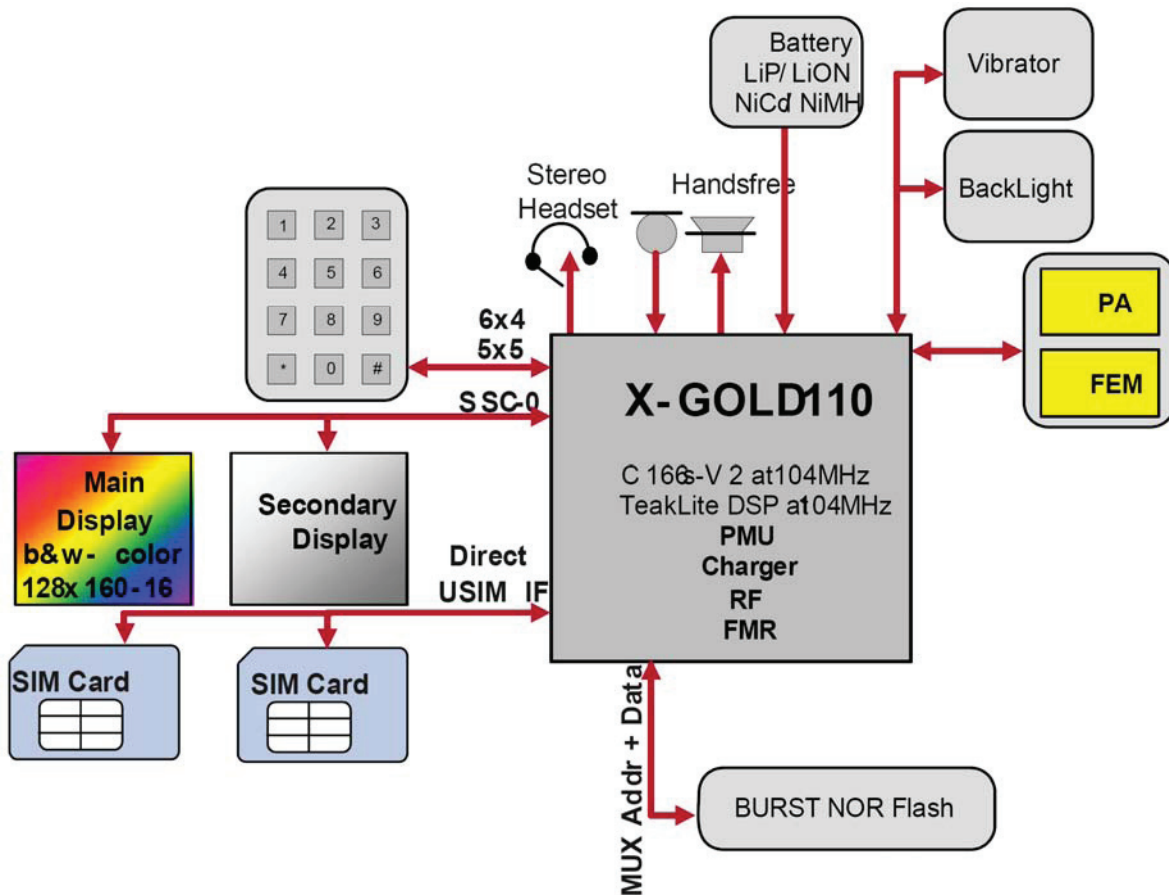


Figure. 3.1.1 X-Gold tm 110 Hardware Block Diagram

3.1.1 General

Technology:

- SoC, Monolithic, 65 nm CMOS
- Package:
 - WFWLB, 8x8x0.8 mm
 - 0.5 mm pitch
 - 217 balls

3.1.2 RF Transceiver

- Dual-band direct conversion receiver
- Tri/Quad-band possible with external circuitry
- Fully integrated digital controlled XO
- Additional buffer for 2 external system clocks
- Fully digital RF-Synthesizer incl. $\Sigma\Delta$ -Transmitter

3.1.3 Baseband

- High performance fixed-point TEAKlite DSP
- C166S-V2 high performance microcontroller with a 16KB Instruction Cache and a Data cache Buffer.
- FM Stereo Radio Receiver with RDS
- There are several Interfaces:
 - I2S interface for DAI connections (for Tape Approval) and external Audio component connection.
 - High Speed SSC Interface for connection of companion chips (like Serial SD Cards)
 - High Speed SSC Interface dedicated to Display control
 - USIM Interface with support of Protocol T=1 and Dual USIM support.
 - Keypad Interface (6x4 or 5x5 keys)
 - External Memory Controller (EBU) for external RAM/NOR FLASH/Busrt Flash/NAND Flash/Serial Flash (SPI/SQI) and Parallel Display connection
 - Asynchronous serial interface.
 - Asynchronous serial interface for WLAN/BT/GPS control (incl. IrDA support capability) .
 - JTAG Interface, OCDS, Multi-Core Debug and Real Time Trace facilities.
 - Black & white and 128x160 - 16bit color displays are supported
 - PWM source to drive vibrator
 - Keypad and display backlight supported.
 - HASH Unit support for hashing.

3. TECHNICAL BRIEF

Crystal Oscillator

- Fully digital controlled crystal oscillator core with a highly linear tuning characteristic

Mixed Signal and Power Management Unit

- Embedded stepdown converter (1.8V)
- DC/DC boost for voltages up to 15 V for driving White or Blue LEDs
- 8-Ω loud speaker driver (700 mW)
- 16-Ω earpiece driver
- 32-Ω headset driver
- Measurement interfaces (PA temperature, battery voltage, battery temperature, and ambient temperature)
- Accessory Detection
- PCB ID detection as part of measurement interface.
- Differential microphone input
- System start up circuitry
- Charger circuitry for NiCd, NiMh and Lilon cells with integrated Control Current/Voltage Charging.
- Integrated regulators for direct connection to battery.

C166S-V2 Buses

The C166S-V2 is connected to four buses:

1. IMB (Internal Program) bus (64b - 0 cycle instruction bus))
2. DPML (Data-Program) Bus (16b - 0 cycle data bus)
3. X-Bus (16b - 3 cycle peripheral bus)
4. PD-Bus (16b 0 cycle peripheral bus)

Bus Interconnections

The interconnection between the X-Bus and the TEAKlite Bus uses:

- Multicore Synchronization
- Shared Memory.

3.1.4 FM Radio

- Integrated FM radio
 - FM Stereo RDS Receiver
 - Sensitivity 2 μ V EMF
 - Support for US & EU bands
 - Stereo recording

3.1.5 Display

- Type
 - 128*128, QQVGA, 65k color (parallel)
- Interface
 - Parallel 8/9bit MIPI-DBI Type B
 - Interf. voltage at 1.8V or 2.8V
- gRacr - Display Controller (Hardware)
 - 30 fps Display update without DMA (up to 60 fps) (full or partial)
 - Video post processing Scaling, Rotation (90° steps), Mirroring
 - Overlay with alpha blending
 - Color conversion YUV -> RGB
 - 2D vector graphics (Lines, filled rectangles, Bit block transfer
(e.g. sprites, scrolling, antialiased bitmap fonts)

3. TECHNICAL BRIEF

3.2 Power Management

A mobile platform requires power supplies for different functions. These power supplies are generated in the integrated power management Unit (PMU). The PMU is designed to deliver the power for a typical standard phone.

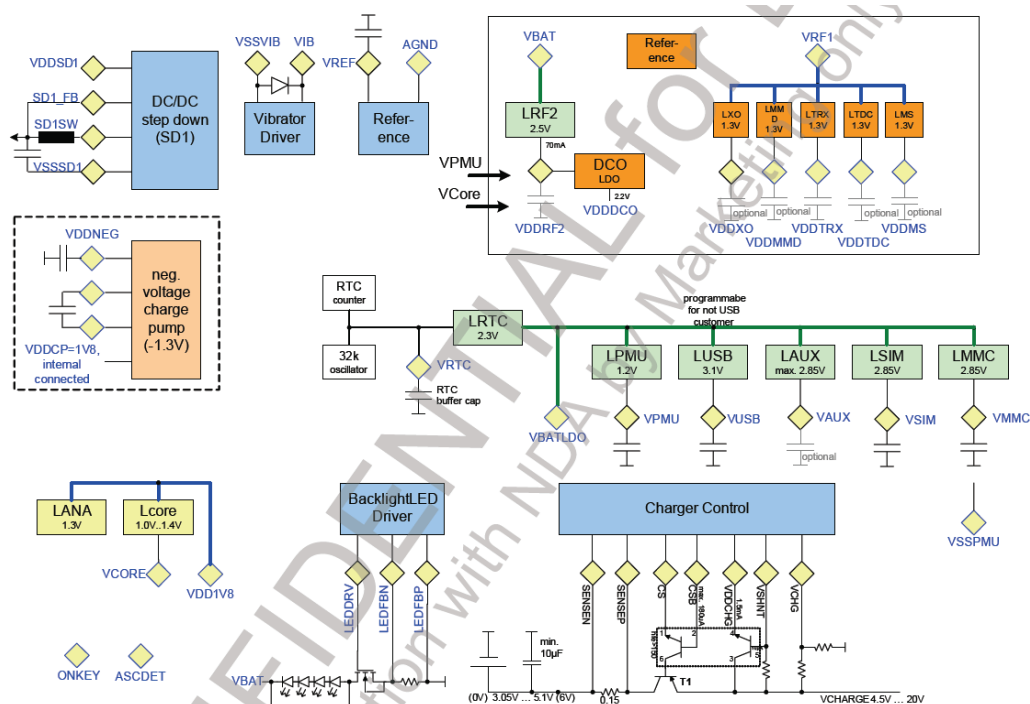


Figure. 3-2-1 Block Figure of the PMU Modules X-Gold tm 110

▪ DC/DC Step Down Converter for 1.8V (SD1)

The DC/DC converter generates a 1.8 V supply rail. This voltage rail is used to supply main parts of the system, like the digital core of the chip (via LDO LCORE), parts of the mixed signal macro, parts of the RF macro and the external memory if a 1.8V memory is used.

▪ **Linear voltage Regulators (low dropout) LDOs**

The LDOs are used to generate the supply for the different supply domains not directly supplied out of the DC/DC converter.

▪ **LCORE**

The LCORE LDO provides the VCORE supply used for most of the digital parts of the chip

▪ **LPMU**

The LPMU provides VPMU supply for the PMU supply, e.g. for the startup state machine and analog parts like ADC, sense amplifier etc.

▪ **LAUX**

The LAUX generates VAUX. It is a general purpose LDO and can be used for different functions depending on the phone application, e.g. for the display or Camera.

▪ **LSIM**

The LSIM LDO generates the VSIM supply for the SIM card and interface. It is designed to supply Standard SIM cards.

▪ **Other LDOs**

The RF module has implemented several LDO's for different RF Power domain.

The mixed signal module has some LDO's for the audio driver and microphone supply.

3. TECHNICAL BRIEF

Supply Domain LDO Name	Voltage	Max. Current	Output Cap	Input Domain	Comment
VBAT	0 ... 6.0 V				Operating range is 3.05 V ... 5.5 V, system emergency switch off voltage is about 2.8 V
VDD1V8	1.8 V	450 mA	22 μ F optional 10 μ F	VBAT	This voltage is generated by the DC/DC converter with 3.3 μ H inductor, (10 μ F output cap is preferred but needs to be checked) The voltage is used for: Memory supply, and via LDOs for digital core supply, mixed signal supply and RF supply.
LCORE	1.2 V	100 mA	2x100 nF	VDD1V8	Assumption: C166 core clock 104 MHz, DSP clock 104 MHz
LANA	1.3 V	10 mA	No	VDD1V8	No ball
LRTC	2.3 V	2 mA	≥ 100 nF	VBAT	This supply is only used for the HPBG, the 32.768 kHz oscillator and the real-time clock counter required during the sleep- and low-power mode.
LPMU	1.3 V	15 mA	100 nF	VBAT	Supply for the digital part of the PMU including digital control of DC/DC converter. This voltage is also used for the N-DEMOS driver of DC/DC converter and the class-D amplifier and the core PLL.
LAUX	1.5 V ... 2.85 V	150 mA	≥ 470 nF	VBAT	General purpose LDO for e.g. Display, Bluetooth, Camera etc. Programmable output voltages are (1.5 V, 1.8 V, 2.5 V, 2.85 V)
LSIM	1.8 V / 2.85 V	30 mA	≥ 100 nF	VBAT	LDO dedicated to the SIM-Card supply. It is chip internal connected to the SIM interface driver.
VDDNEG	-1.3 V	100 mA	100 nF	VDD1V8	Negative voltage for the bipolar headset audio driver. Generated by a charge pump.

Table. 3-2-1 Power supply Domains (without RF)

3.2.1 Power on and startup

▪ Analog startup Circuit

Because the POR circuit and the LPBG are directly connected to the battery, it is not possible to switch them off. If the battery voltage exceed the power on reset threshold (2.5V), the power on reset is released, the LPMU regulator and the LRTC voltage regulator are switched on. The LPMU regulator starts in its ultra-low power mode

The LPMU regulator generates a control signal (lpmu_OK) that enables the 50KHZ PMU oscillator. The output clock of the oscillator is checked with a fully coded counter. A counter overflow releases the reset (vpmu_rst_n) signal for the small PMU state-machine.

▪ Small first digital State-Machine

The small PMU state-machine is always connected to VPMU After starting from reset the small startup state machine enters the SYSTEM OFF state and only continuous the startup procedure if a switch on event like first connect, on-key, wake up or charge detect occurs.

▪ PMU-main State-Machine

The main PMU state-machine is always connected to VPMU also. The power up sequence driven by the PMU state-machine can be seen in Figure18. After enabling the reference (HPGB) and waiting for the settling time, the battery voltage is measured and compared with the power on threshold. If the battery voltage is high enough, the SD1 DC/DC converter and the LCORE LDO are started. A timer ensures that the supply voltage will be stable before the DCXO is enabled. The DCXO settling time is ensured using a fixed timer. After an overflow of this timer, the reset is released for the rest of the system. The PMU state machine remains in this System-ON state until the system is switched into the OFF state. For example the system sleep mode is completely configured by software(for example switching off the LDO's, switching of the DCXO etc.) and controlled by the VCXO_enable signal. The reason for the startup is stored in the ResetSourceRead register.

▪ Battery Measurement

The ADC and the oscillator for the ADC needs the VDD_ADC supply voltage from the LADC LDO. LADC uses either the charger voltage VDD_CHARGE or VDDRTC as input voltage. The input voltage is selected automatically by a bulk switch circuit. LADC, the ADC and the oscillator are enabled on request for every battery measurement if the charger unit is not running. This is handled by an ADC control block in one of the state-machines. If the charger unit is running the ADC is controlled by the charger state-machine.

3. TECHNICAL BRIEF

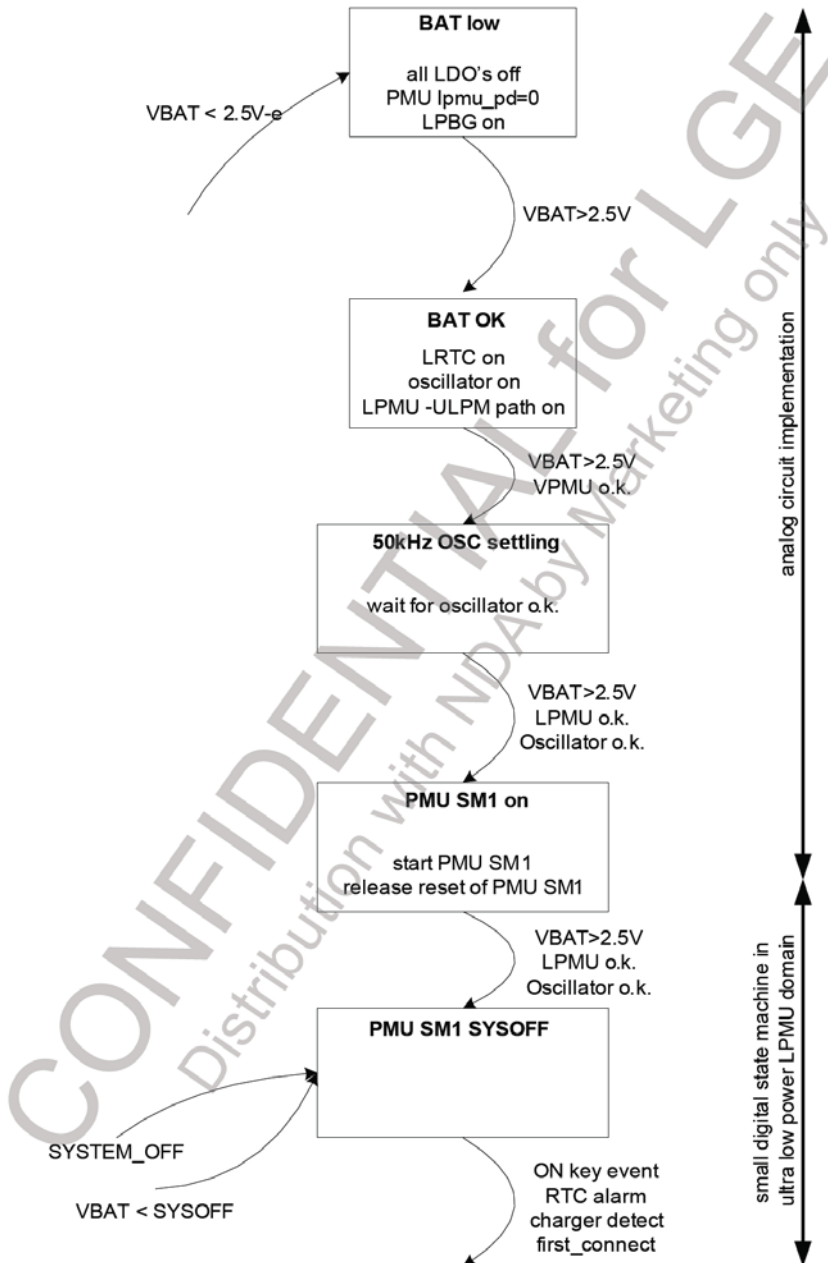


Figure.3.2.1 First Part of the State Machine, Running in Different Power Domains than the Second Part

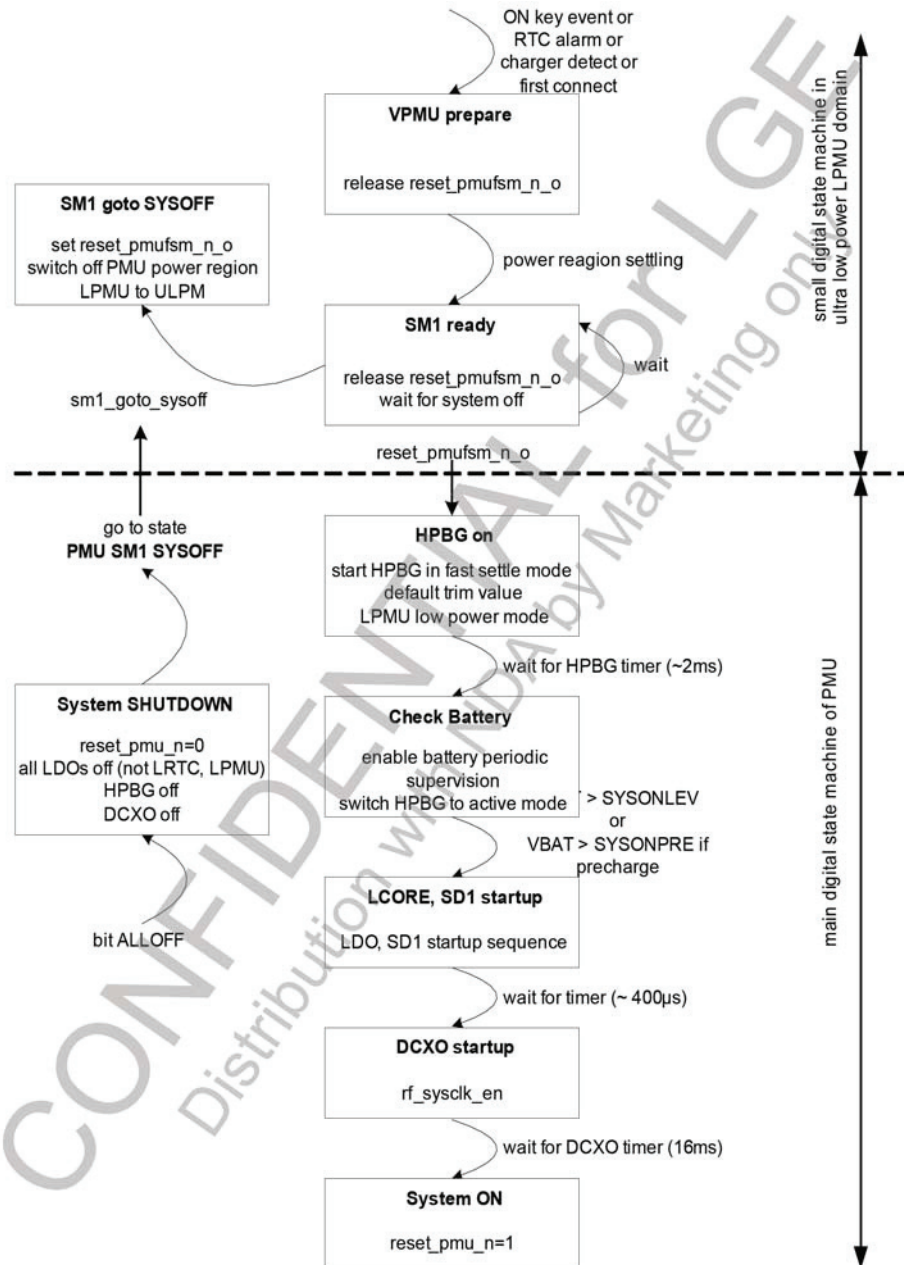


Figure 3.2.2 Second (Main) Part of the Startup State Machine in the VPMU Domain

3. TECHNICAL BRIEF

3.2.2 Switching on due to first connect

If the battery voltage is connected the first time, that means the system enters the first time the SYSOFF state, this is stored in a first connect flag. If the first connect flag is set, the system will start immediately and not wait for any other system on event in the SYSOFF state.

3.2.3 Switching on due to on-Key event

The on key is connected to the ONKEY pad. The ESD protection and the input structure of this pad are connected to VRTC. If the ONKEY pad is forced to VRTC by an external key or similar circuit, the system starts. The ONKEY is sampled with the PMU clock. It has to be sampled four times high before a valid on event is generated. The status of the ON key can be read in the PMU registers, so it can be used as a functional key during phone operation also.

3.2.4 Switching on due to RTC alarm

The real time clock can generate a wakeup signal called RTC alarm. This signal is sampled from the state-machine and after successfully detecting a high, the system is switched on.

3.2.5 Switching on due to charging

When a battery with a voltage below the SSONLEV level is inserted, the state machine will not start the system. As long as the battery voltage stays lower than SYSONLEV the system will stay off. The only possibility to start up the system is due to an external charger.

If an external charger is connected and detected and the battery is charged above the SYSONPRE voltage level the system will start up.

The PMU main state machine waits in the Check battery state until the battery voltage condition is fulfilled. The charger state machine provides the necessary pre-charge indication signal. This pre-charge signal is denounced in a small counter to have a stable signal. This is important, especially in half/full-wave charging where the charger detection is switching between charger detected/not detected according the AC supply frequency. Reasons.

For details on pre-charging see the charger chapter. The charger is controlled by an independent state machine. The pre-charge signal is used to trigger the pre-charge signal is used to trigger the pre-charge functionality. The charger state machine fully control the pre-charge, the PMU-state machine now changes to state HPBG on state and the system starts. This state change is indicated to the charger state-machine to

enable the charger watchdog for safety

3.2.6 Power Supply Start-up sequence

In order to avoid an excessive drop on the battery voltage caused by in-rush current during system power-on, possibly leading to system instability and “hick-ups” a staggered turn-on approach for the regulators is implemented. The regulators are turned on in a well defined sequence, thus spreading the in-rush current transients over time.

The IO's of X-GOLD TM 213 are isolated in OFF mode (core supply is off). The isolation signal is controlled by the PMU state machine. This ensures that the PADs are in a well defined state during core supply settling. This allows to power up the LCORE core regulator and wait for the core to reach reset state before powering up the I/O supply regulators.

3. TECHNICAL BRIEF

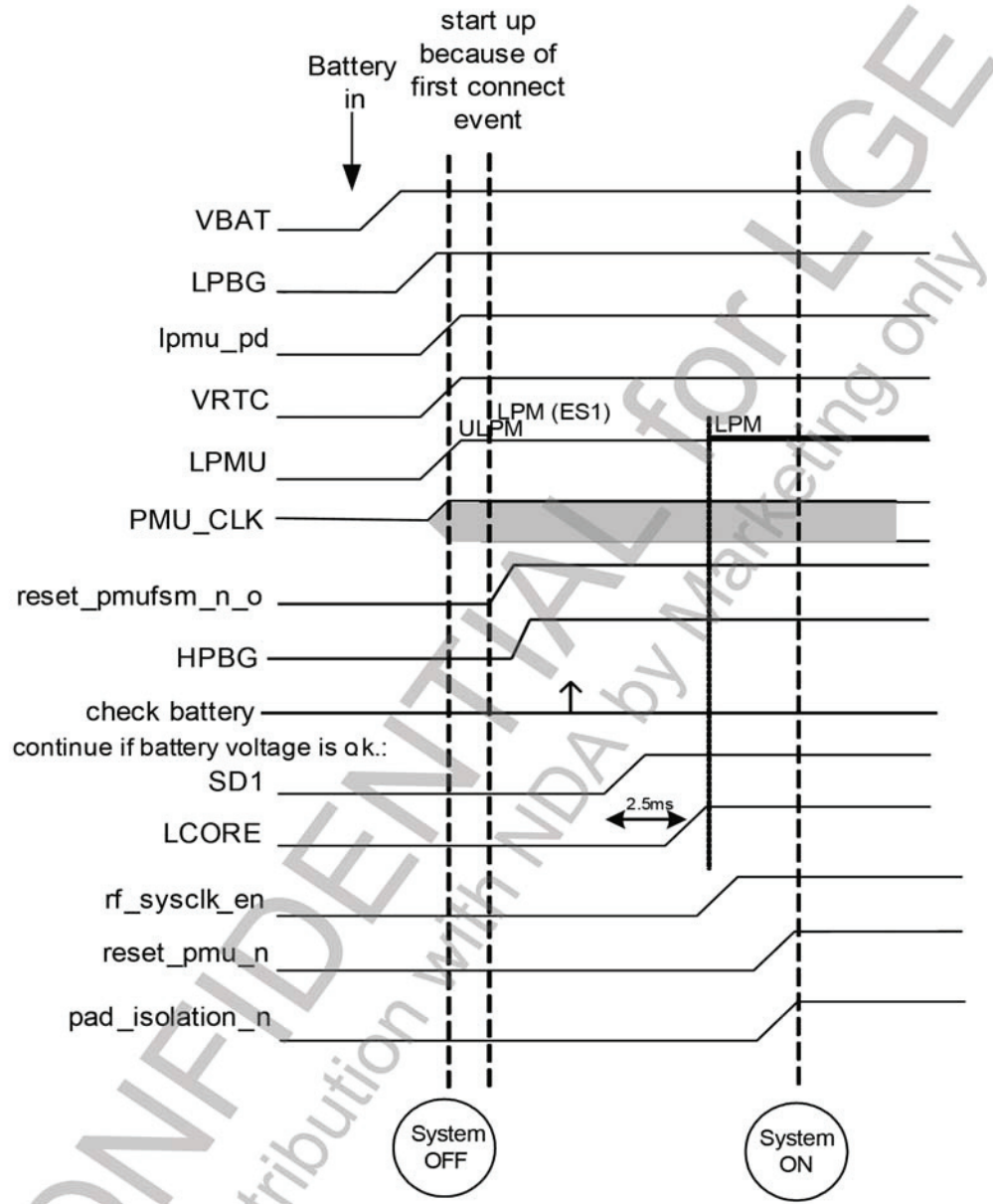


Figure 3.2.3 Start Up Sequence (triggered by First Connect Event)

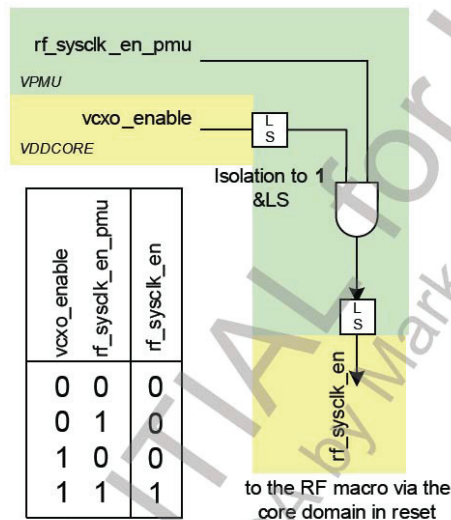


Figure 3.2.4 How sysclock Enable is Routed in the PMU

3.2.7 Sysclock Switching

The PMU controls the rf_sysclk_en signal of the DCXO in the RF macro. During startup the PMU enables the DCXO. After the system is running the DCXO is controlled by the SCU of the baseband by using the vcxo_enable signal. This is handled by a dedicated logic in the PMU, see **figure 3.2.4**. As long as rf_sysclk_en_pmu, the output of the PMU state-machine is high, vcxo_enable controls the rf_sysclk_en signal to the RF. If rf_sysclk_en_pmu is low, the DXCO is switched off, independent from vcxo_enable.

3.2.8 Undervoltage Shutdown

In active mode the PMU periodically measures the battery voltage using the ADC from the charger unit. If the battery is measured to be below the programmable shut-down level (called SYSOFF), the system changes to OFF mode. This is done via the SHUTDOWN state of the PMU state machine. (see chapter switch OFF)

3. TECHNICAL BRIEF

3.2.9 Silent Reset

WDT-reset and software-reset shall happen silently to ending customer: SIM card and interfaces have to stay powered and not reset by neither WDT-reset or C166s SRST instruction. To allow this, some LDO settings and some registers (as e.g. USIM_pad control register) are reset only by system-reset (HW-reset or power-on reset).

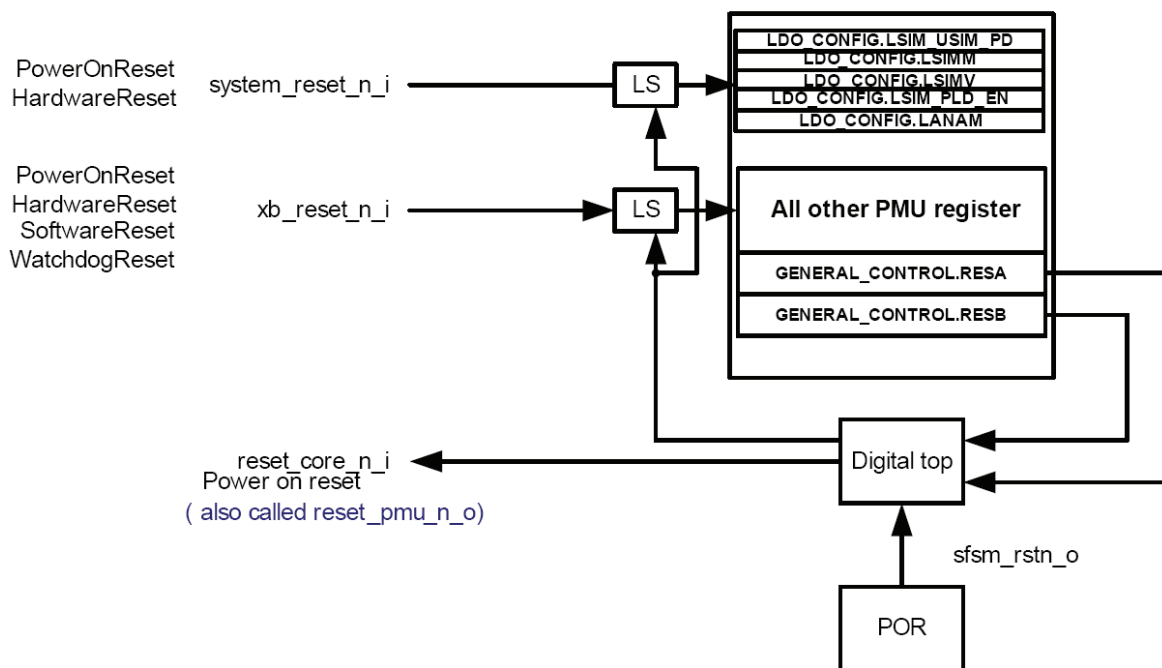


Figure 3.2.5 PMU Reset

3.2.10 PMU Clock

During the first startup (for example plugging in a battery) a PMU internal oscillator is used for generation of the PMU clock (`pmu_clock`). The frequency is slightly above 32 kHz (typ. 50 kHz) to be out of the audio band also for worst case devices. After first startup the software shall enable the 32 kHz crystal oscillator. It is not possible to use the 32 kHz oscillator during first startup, because the settling time of the oscillator can be quite long. After the 32 kHz oscillator is running and settled the software shall switch the PMU clock to the 32 kHz clock and disable the internal PMU oscillator for power saving reasons. The 32 kHz oscillator shall never be disabled after the PMU clock has been switched. The ADC in the charger unit has its own oscillator generating a frequency of about 10 MHz. This oscillator is running during charging and during battery measurements triggered by the PMU. It is off otherwise.

3.2.11 System Sleep Mode

The sleep mode is controlled by using the VCXO_enable signal (dcxo_en_i) and gsm_sleep_i. These signals are used to deactivate the HPBG and setting LDO LPMU in the ultra-low-power mode. In addition the DCXO is switched off by the VCXO_enable signal. The VCXO_enable signal is also used to switch some LDO's (software configured) to sleep and/or off mode or to change the output voltages of said LDO's. The state of the main PMU state machine is not changed due to VCXO_enable.

3.2.12 DC/DC Pre-Load Register Handling

The DC/DC converter works in different modes. If the mode is switched from PFM to PWM the pulse-width of the DC/DC converter depends on the current battery voltage (and on the output voltage). The PMU state-machine knows the battery voltage because of the battery supervision function. Depending on this value it selects a startup pulse-width for the DC/DC converter out of a register table. (4-values)

3.2.13 Power Down Sequence

Setting bit OFF in the GeneralControl register switches the system into OFF mode. After the turn off event, the state-machine switches to the SHUTDOWN state. The reset_pmu_n_o signal changes to low, the I/O pads are isolated using the padisolation_n signal, the LCORE LDO and the SD1 DC/DC converter are switched off, the LPMU LDO is switched to ultra-low power mode, the DCXO is turned off and the bandgap buffer is disabled. Before switching OFF the software shall have enabled the 32 kHz oscillator and has switched the PMU clock to the 32 kHz clock to archive the target OFF current .

3. TECHNICAL BRIEF

3.3 FEM with integrated Power Amplifier Module (SKY77542/SKY77543,U301)

3.3.1 Internal Block Diagram

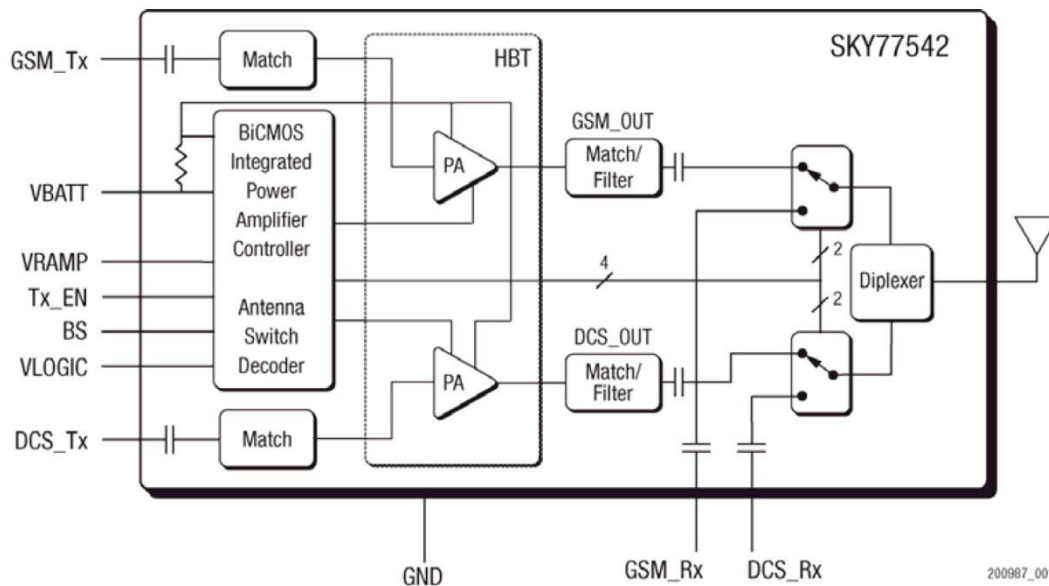


Figure. 3.3.1 SKY77542 FUNCTIONAL BLOCK DIAGRAM

3.3.2 General Description

The SKY77542 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control (iPAC™) for dual-band cellular handsets comprising GSM900 and DCS1800 operation. Designed in a low profile, compact form factor, the SKY77542 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

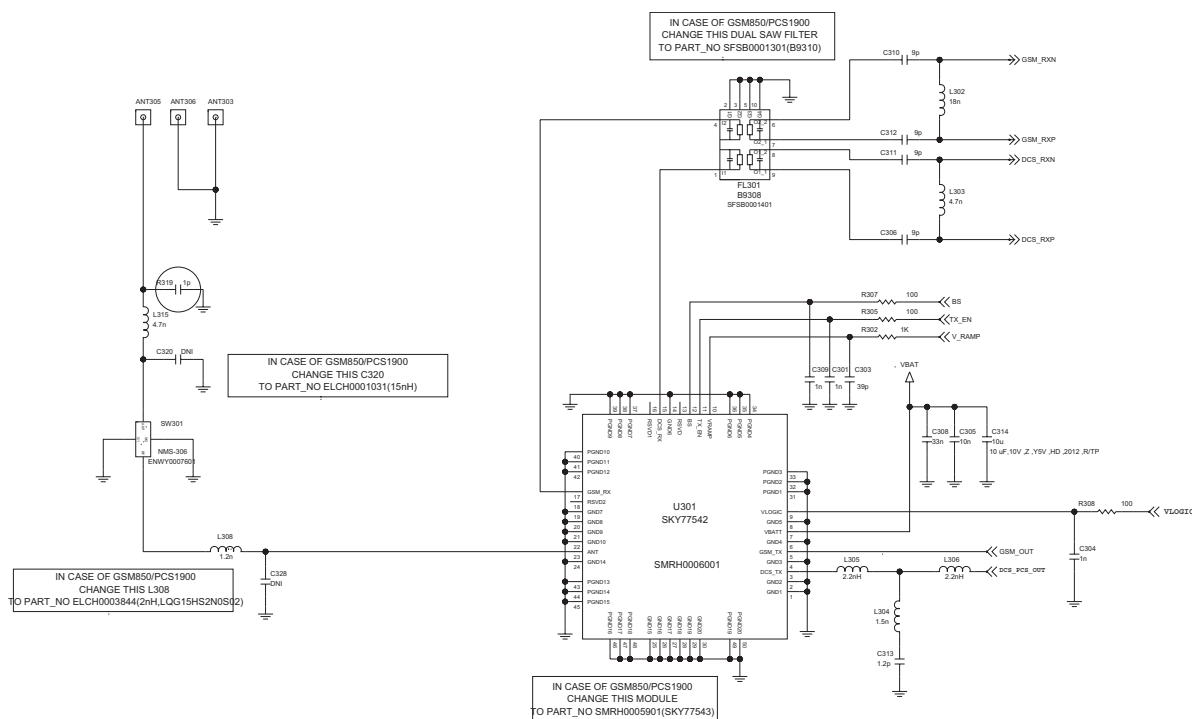
The module consists of a GSM900 PA block and a DCS1800 PA block, impedance-matching circuitry for 50 Ω input and output impedances, Tx harmonics filtering, high linearity and low insertion loss PHEMT RF switches, diplexer and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM900 band and the other PA block supports the DCS1800 band. Both PA blocks share common power supply pads to distribute current.

The output of each PA block and the outputs to the two receive pads are connected to the antenna pad through PHEMT RF switches and a diplexer. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic over mold.

Mode	V _{LOGIC}	Input Control Bits	
		Tx_EN	BS
STANDBY	0	X ¹	X ¹
GSM_Rx	1	0	0
DCS_Rx	1	0	1
GSM_Tx	1	1	0
DCS_Tx	1	1	1

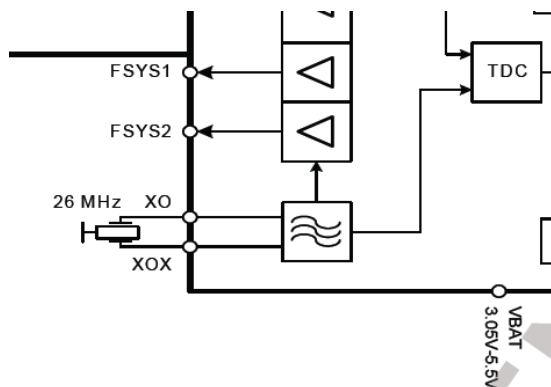
¹ X = don't care

Figure 3.3.2 Band SW Logic Table



3. TECHNICAL BRIEF

3.4 Crystal(26 MHz, X102)



The X-GOLDTM110 RF-Subsystem contains a fully integrated 26 MHz digitally controlled crystal oscillator,

designed for 8 pF crystals. The only external part of the oscillator is the crystal itself. Overall pulling range of the

DCXO is approximately ± 55 ppm, controllable by a 13-bit tuning word DCXO_AFC[16:4].

The 26 MHz reference clock can also be applied to external components like Bluetooth or GPS, via the buffered output signal FSYS1.

Figure. 3.4.1 Crystal Oscillator External Connection

3.5 RF Subsystem of PMB8810 (U101)

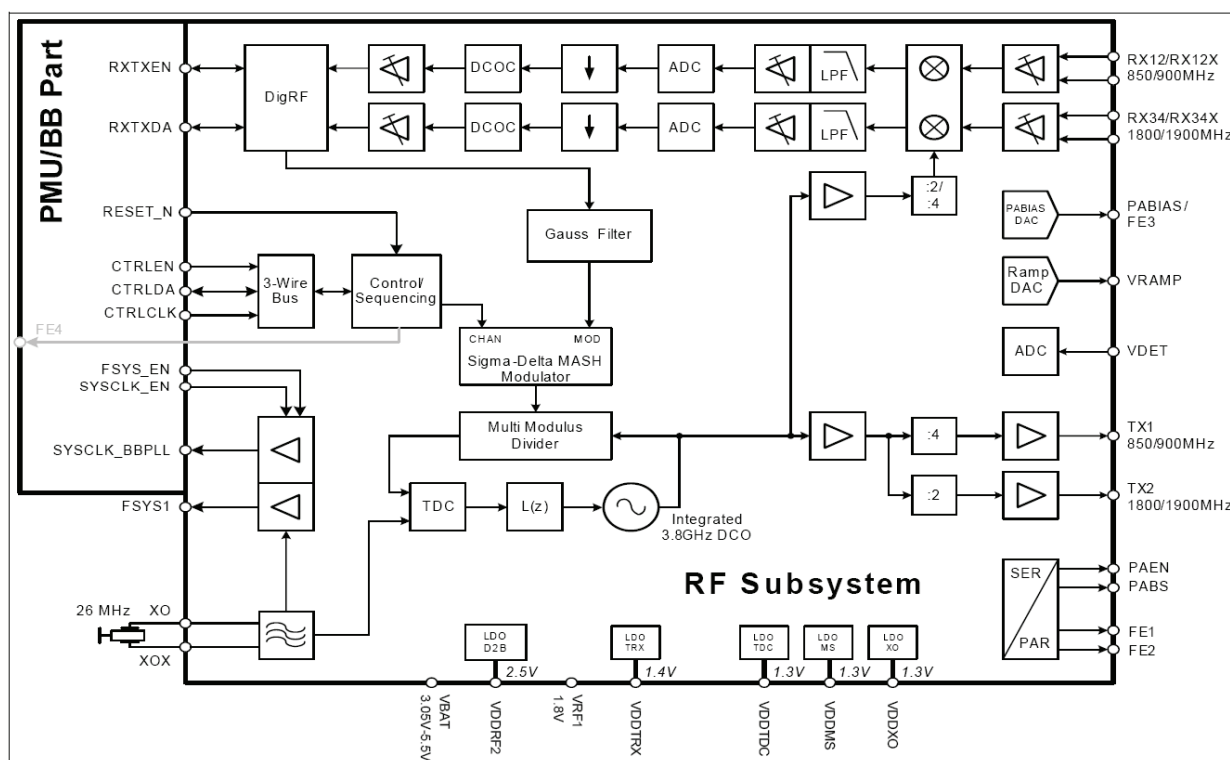


Figure. 3-5-1 Block DIAGRAM of RF Subsystem

3.5.1 GENERAL DESCRIPTION

The PMB8810 RF subsystem is designed for dual-band GSM voice and data applications (GPRS class 12). The system can be configured to support one low band, GSM850 or EGSM900, and one high band, DCS1800 or PCS1900. A block diagram of the RF subsystem is given in figure 3.5.1.

3.5.2 FUNCTIONAL DESCRIPTION

3.5.2.1 Receiver

The X-GOLDTM110 receiver is based on the Direct Conversion Receiver architecture (DCR) and can be configured to support one low band, GSM850 or EGSM900, and one high band, DCS1800 or PCS1900. A fully differential receive path is chosen to suppress on-chip interference.

The analog section of the receiver contains two LNAs, quadrature mixer, low-pass filter, and a high resolution continuous-time delta-sigma analog-to-digital converter.

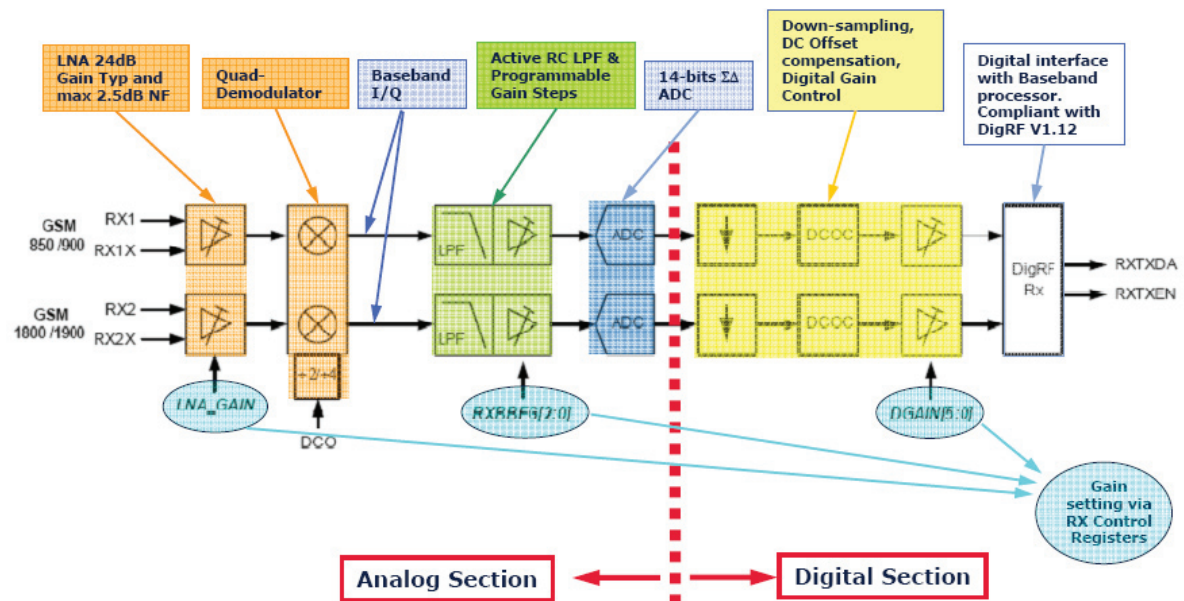


Figure. 3.5.2 RECEIVER CHAIN BLOCK DIAGRAM

3. TECHNICAL BRIEF

3.5.2.2 Transmitter

The GMSK transmitter supports power class 4 for GSM850 or GSM900 as well as power class 1 for DCS1800 or PCS1900. The digital transmitter architecture is based on a fractional-N sigma-delta synthesizer for constant envelope GMSK modulation. This configuration allows a very low power design without any external components.

Up- and down-ramping is performed via the ramping DAC connected to VRAMP.

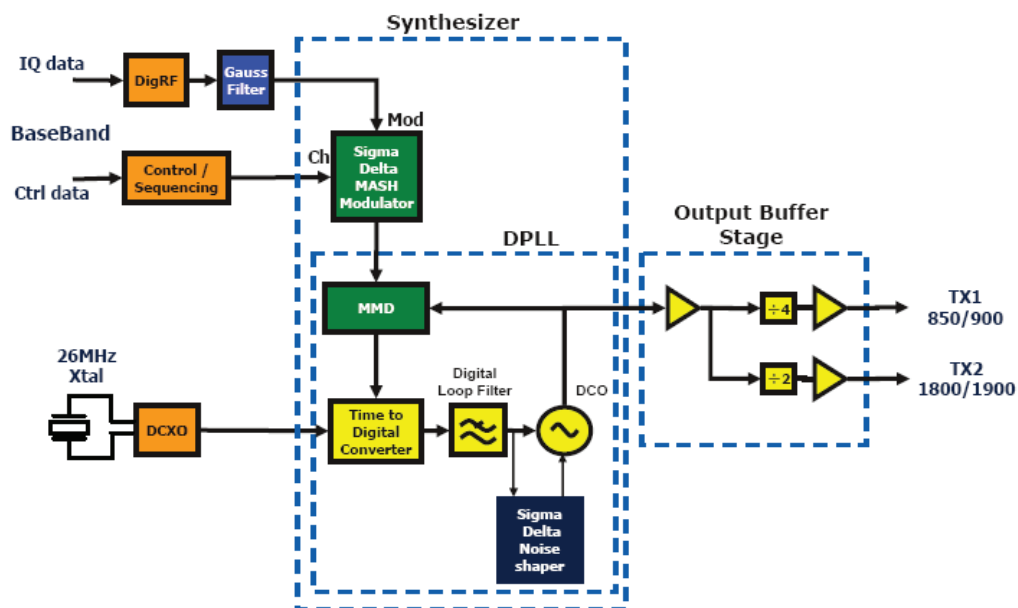


Figure. 3.5.3 TRANSMITTER CHAIN BLOCK DIAGRAM

3.5.2.3 RF synthesizer

The X-GOLDTM110 transceiver contains a fractional-N sigma-delta synthesizer for frequency synthesis in RX mode. In TX mode, the fractional-N sigma-delta synthesizer is used as a Sigma-delta modulation loop to process the phase/frequency signal. The 26 MHz reference signal is provided by the reference oscillator. This reference signal frequency serves as the comparison frequency for the phase detector and provides the digital circuitry with a clock signal.

3.5.2.4 Front-end/PA Control Interface

Two outputs (FE1, FE2) for direct control of antenna switch modules enable to select RX- and TX-mode as well as low- and high-band operation.

An extra band select signal PABS for the power amplifier is used, to support discrete PA and switching modules. Time accurate power dissipation of the PA is achieved by the control signal PAEN.

A minor set of power amplifiers require a bias voltage to enhance power efficiency. Support of this power amplifiers is achieved by the implemented bias DAC.

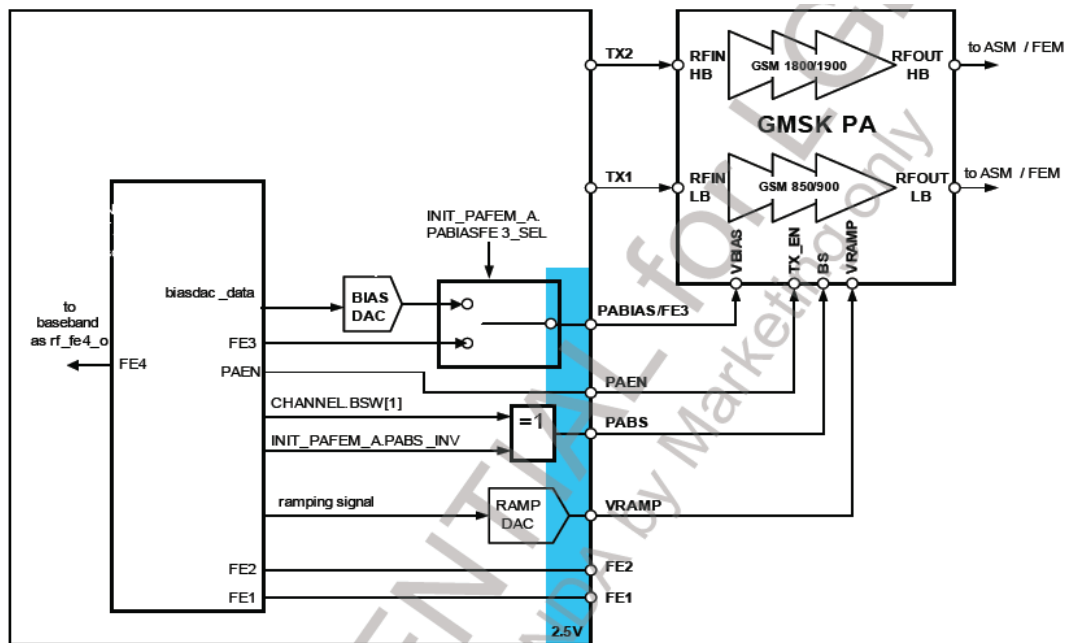


Figure. 3.5.4 PA AND FEM CONTROL BLOCK DIAGRAM

3. TECHNICAL BRIEF

3.6 MEMORY(K5N3217ATA-AT80, U102)

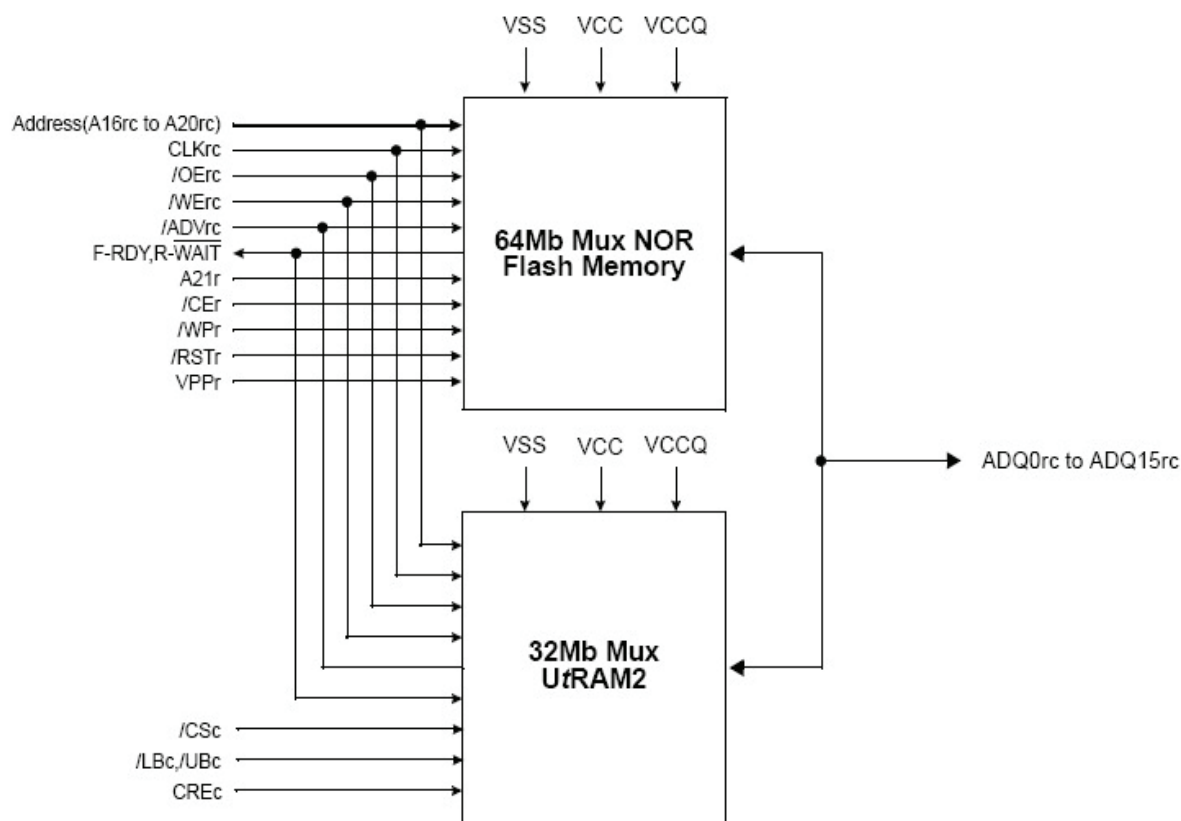


Figure. 3.6.1 MEMORY BLOCK DIAGRAM

The K5N6433ATM is a MultiChip Package Memory which combines 64Mbit NOR Flash Memory and 32Mbit UtRAM2.

The 64Mb NOR Flash featuring single 1.8V power supply is a 64Mbit Synchronous Burst Multi Bank Flash Memory organized as 4Mx16. The memory architecture of the device is designed to divide its memory arrays into 135 block with independent hardware protection. This block architecture provides highly flexible erase and program capability.

The 64Mb NOR Flash consists of sixteen banks. This device is capable of reading data from one bank while programming or erasing in the other bank. Regarding read access time, the device provides an 14.5ns burst access time and an 70ns initial access time at 54MHz. At 66MHz, the device provides an 11ns burst access time and 70ns initial Access time. At 83MHz, the device provides an 9ns burst access time and 70ns initial access time. At 108MHz, the device provides an m 7ns burst access time and 70ns initial access time.

At 108MHz, the device provides an 7ns burst access time and 70ns initial access time. The device performs a program operation in units of 16bits (Word) and an erase operation in units of a block. Single or multiple blocks can be erased. The block erase operation is completed within typically 0.7sec. The device requires 15mA as program/erase current in the extended temperature ranges.

SAMSUNG's UtRAM products are designed to meet the request from the customers who want to cope with the fast growing mobile applications that need high-speed random access memory. UtRAM is the solution for the mobile market with its low cost, high density and high performance feature. device is fabricated by SAMSUNG's advanced CMOS technology using one transistor memory cell. The device supports the traditional SRAM like asynchronous operation (asynchronous read and asynchronous write), the NOR flash like synchronous operation (synchronous burst read and asynchronous write) and the fully synchronous operation (synchronous burst read and synchronous burst write). These operation modes are defined through the configuration register setting. It supports the special features for the standby power saving. Those are the PAR(Partial Array Refresh) mode, DPD(Deep Power Down) mode and internal TCSR(Temperature Compensated Self Refresh). It also supports variable and fixed latency, driver strength settings, Burst sequence (wrap or No-wrap) options and a device ID register (DIDR).

The K5N6433ATM is suitable for use in data memory of mobile communication system to reduce not only mount area but also power consumption.

This device is available in 52-ball FBGA Type.

3. TECHNICAL BRIEF

3.7 SIM Card Interface

SIM_CONNECTOR

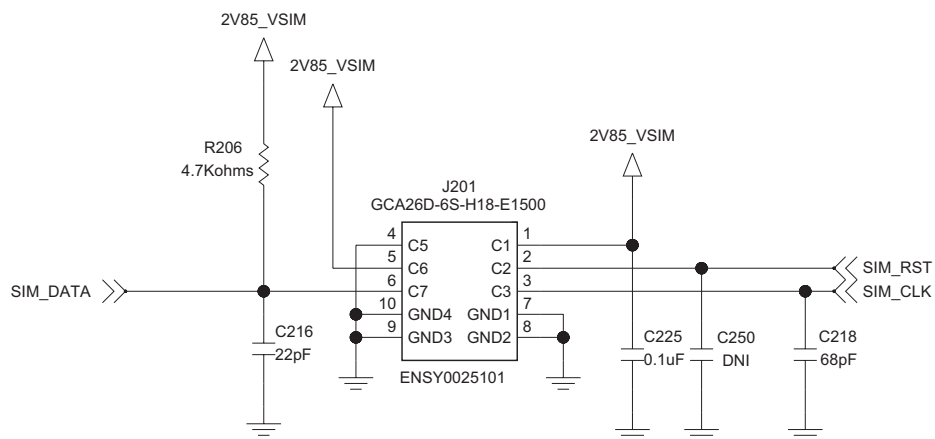


Figure 3.7.1. SIM CARD Interface

The Main Base Band Processor(XMM 110) provides SIM Interface Module.
The XMM2130 checks status Periodically During established call mode whether SIM card is inserted or not, but it doesn't check during deep sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, SIM_RST.
And This model supports 1.8/3V SIM Card.

Signal	Description
SIM_RST	This signal makes SIM card to HW default status.
SIM_CLK	This signal is transferred to SIM card.
SIM_DATA	This signal is interface datum.

3.8 LCD Interface

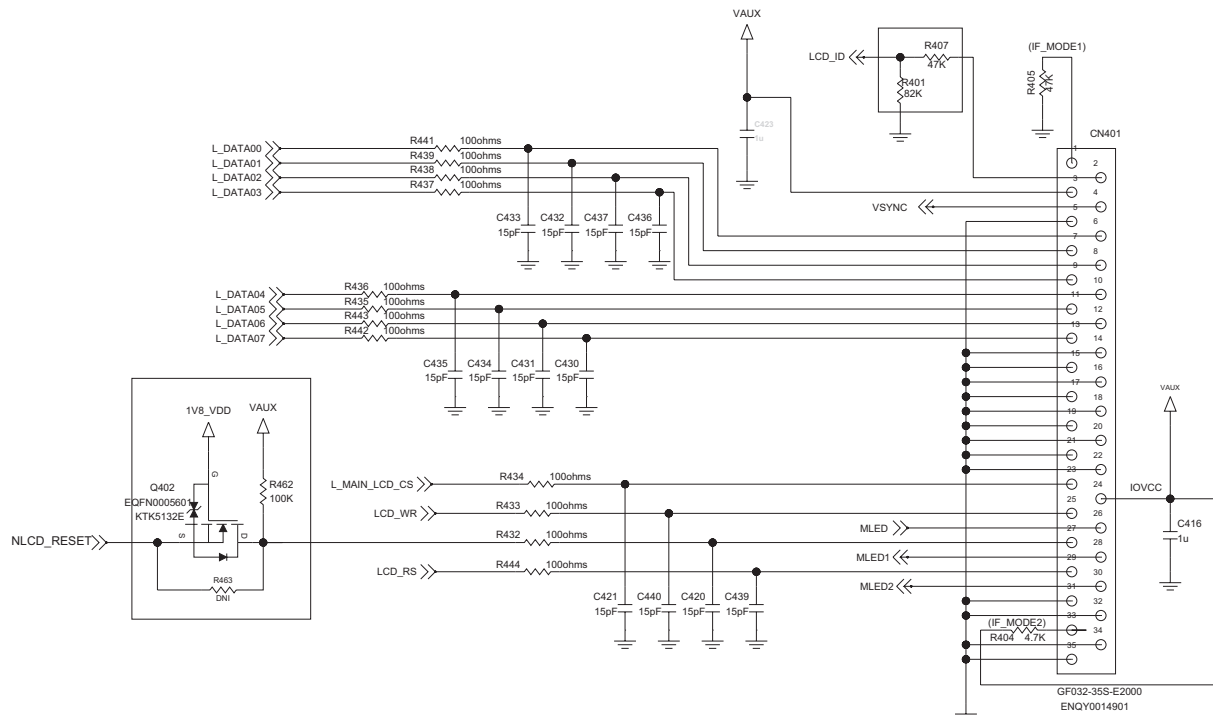


Figure 3.8.1. LCD Interface

The LG4515 is a 262,144-color one-chip controller driver LSI for a TFT liquid crystal display with resolution of 128 RGB x 160 dots, comprising a 384-channel source driver, RAM for graphics data of 128 RGB x 160 dots at maximum, a gate driver and a power supply circuit.

The LG4515 supports high-speed parallel interfaces to 8-, 9-, 16-, 18-bit ports and a function to write RAM data in high speed for transferring data efficiently and rewriting RAM graphics data in high speed.

The LG4515 can operate with low I/O interface power supply up to 1.65V, with an incorporated voltage follower circuit to generate voltage levels for driving an LCD. The LG4515 also supports a function to display in 8 colors and a standby mode, allowing for precise power control by software. These features make the LG4515 an ideal LCD driver for medium or small sized portable products supporting WWW browsers such as digital cellular phones or small PDAs, where long battery life is a major concern.

3. TECHNICAL BRIEF

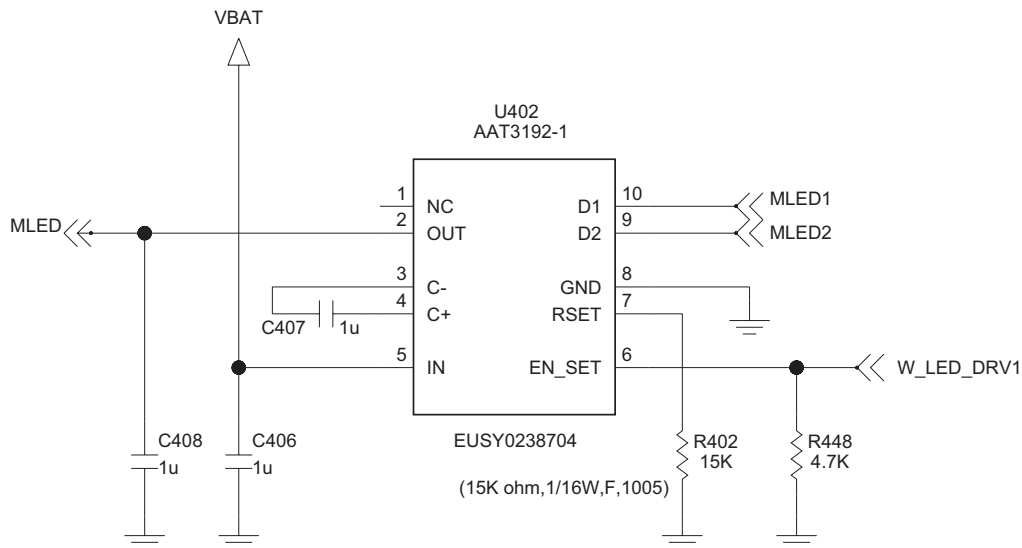


Figure 3.8.2. AAT3192 CIRCUIT DIAGRAM

The AAT3192 is a charge-pump based, current-sink white LED driver capable of driving one or two LEDs up to 30mA, each. It automatically switches between 1x mode and 2x mode to maintain the highest efficiency and optimal LED current accuracy and matching. The AAT3192 charge pump's 1x mode (bypass mode) has very low resistance allowing LED current regulation to be maintained with input supply voltage approaching the LED forward voltage. The AAT3192 is available in the 2x2mm, 10-lead SC70JW-10 package.

- Drives up to 2 LEDs at up to 30mA, each
- Automatic Switching Between 1x and 2x Modes
- 0.9MHz Switching Frequency
- Linear LED Output Current Control
 - Single-wire, S2Cwire Interface
- AAT3192-1: 16-step
- $\pm 10\%$ LED Output Current Accuracy
- $\pm 3\%$ LED Output Current Matching
- Low-Current Shutdown Mode
- Built-in Thermal Protection

3.9 Battery Charger Interface

Single Charging IC for uUSB

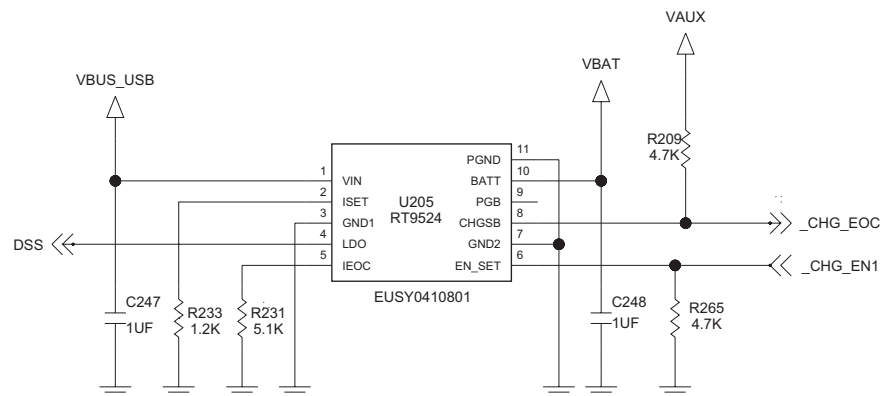


Figure 3.9.1 BATTERY CHARGER BLOCK

The BQ25040 is an intelligent, stand-alone constant current, constant-voltage (CCCV), thermally regulated dual input linear charger designed for charging a single-cell lithium-ion (Li+) battery.

The IC controls the charging sequence from the prequalification state through constant current fast charge, top-off charge, and full-charge indication.

Proprietary thermal-regulation circuitry limits the die temperature during fast charging or when the IC is exposed to high ambient temperatures, allowing maximum charging current without damaging the IC.

The BQ25040 accepts input supply range from -0.3V to 28V, but disables charging if the input voltages exceed +6.9V to protect against unqualified or faulty AC adapters cables. The IC operates over the extended temperature range (-40°C to +85°C)

3. TECHNICAL BRIEF

3.10 Keypad Interface

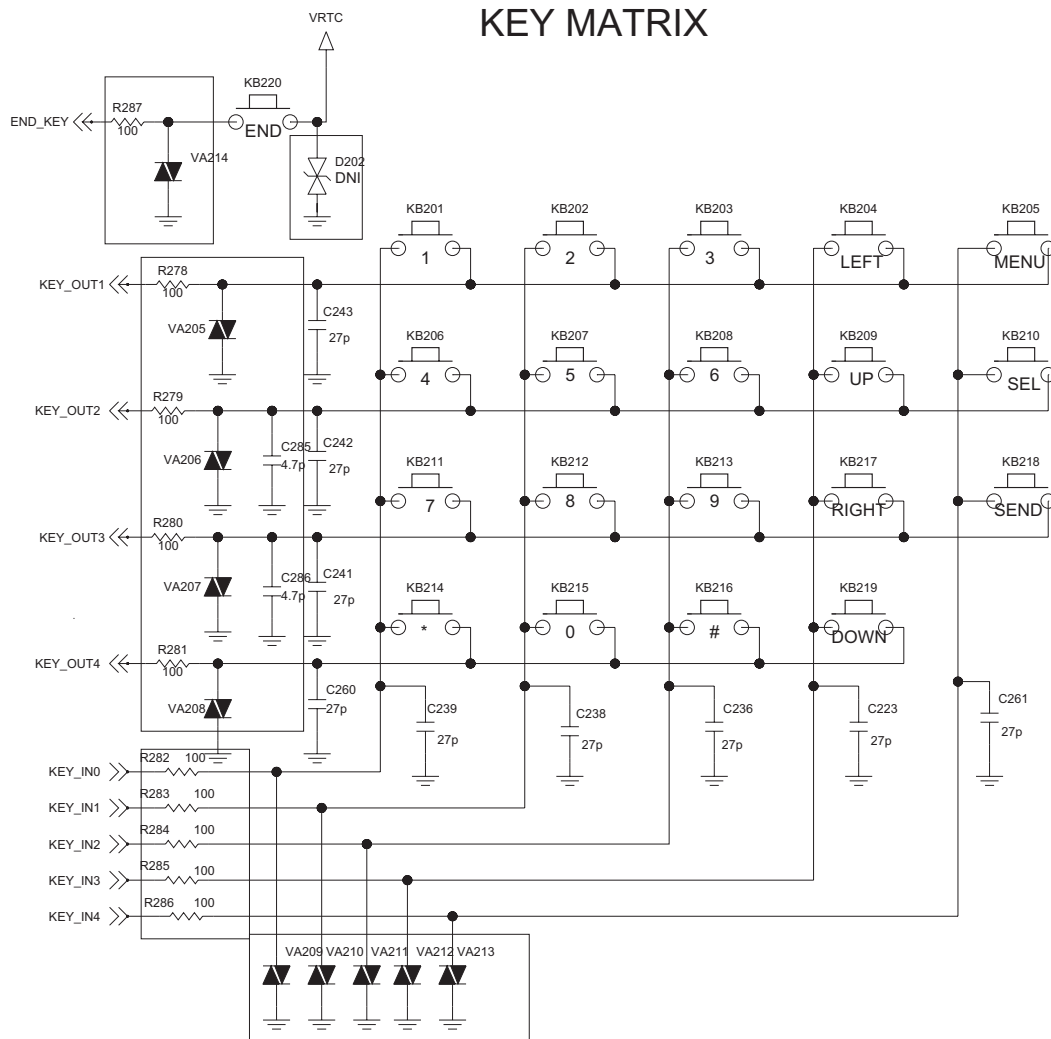


Figure 3.10.1 MAIN KEY STRUCTURE

The Keypad Interface is a peripheral controller, which can be used for scanning external keypad matrices with up to 8 rows and 8 columns (that is 64 standard keys). By adding an additional row of keys connected to ground the number of keys can be extended by up to 8 keys. This results in a maximum number of 72 keys to be identified by the Keypad Interface Controller.

The Keypad Scan Module reduces the number of interrupts and polling through the processor and therefore reduces the power consumption. The module is able to debounce and scan the external keypad matrix automatically without any software intervention. After debouncing it generates an interrupt. The interface controller contains information about the key (or key combination) that was pressed and how long it was pressed.

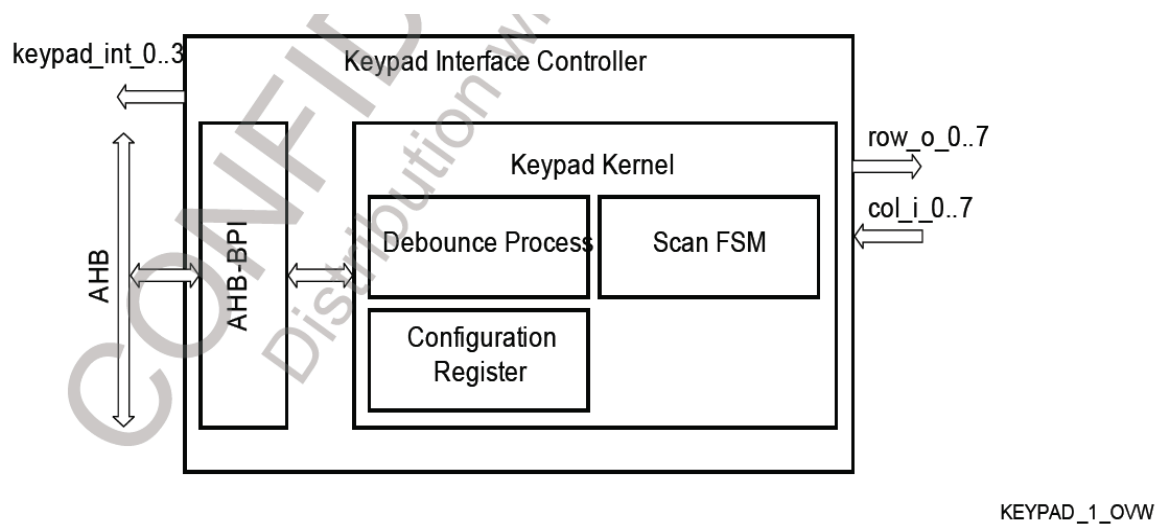


Figure 3.10.2 Block Diagram and System Integration of the KPD

3. TECHNICAL BRIEF

3.11 Audio Front-End

3.11.1 Functional Overview

The audio front-end of X-GOLD™ 110 offers the digital and analog circuit blocks for both receive and transmit audio operation, from a mobile phone perspective (called audio-in and audio-out subsequently). It features a high-quality, stereo digital-to-analog path with amplifier stages for connecting acoustic transducers to X-GOLD™ 110. In audio-in path the supply voltage generation for electret microphones, a low-noise amplifier and analog to digital conversion are integrated in X-GOLD™ 110. A more detailed functional description will be given in the following sections.

The audio front-end itself can be considered to be organized in three sub-blocks:

- Interface to processor cores (TEAKLite® and - indirectly - ARM)
- Digital filters
- Analog part

The following figure shows an architecture overview of the Audio section.

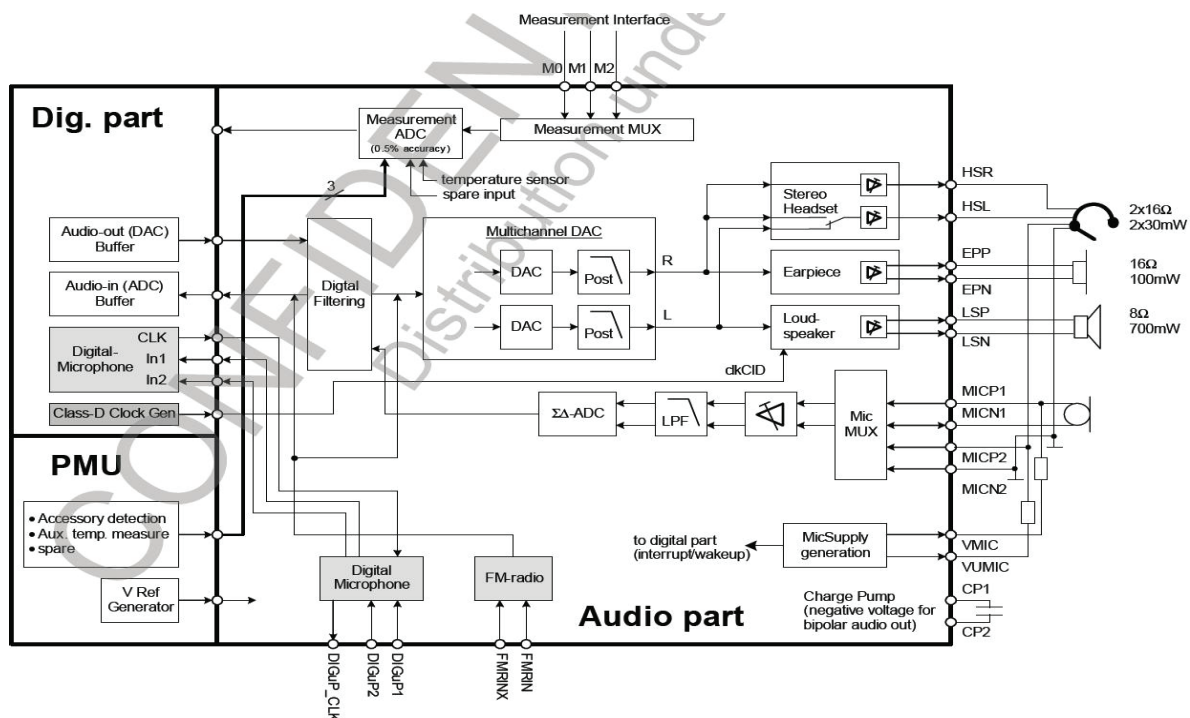


Figure 3.11.1 Audio Section Overview

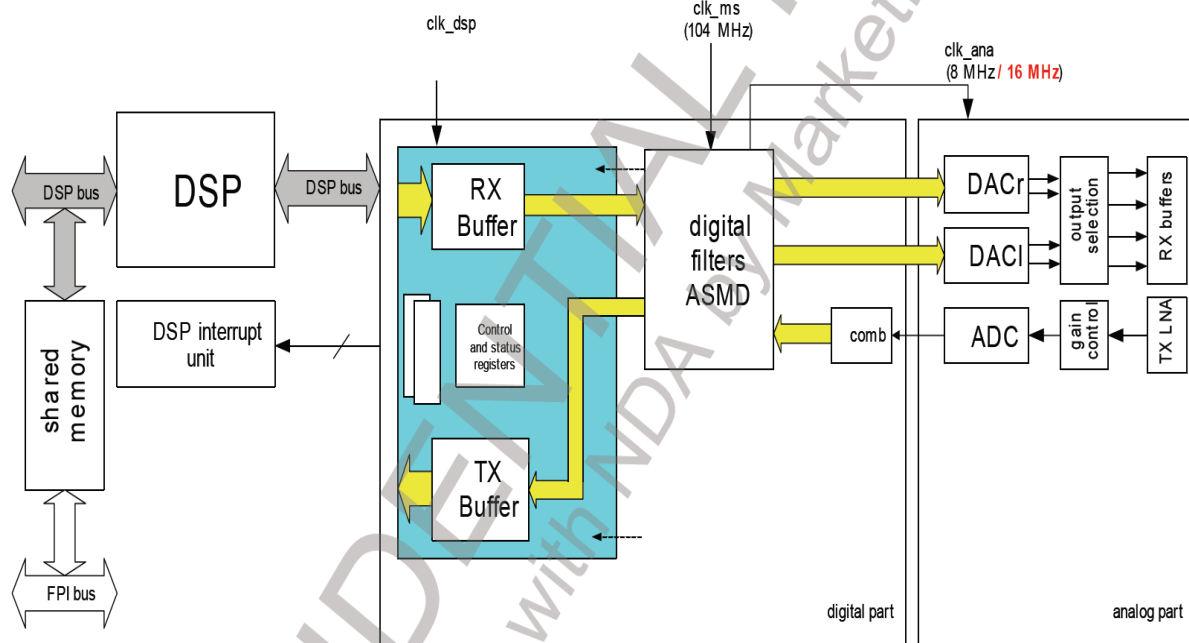


Figure 3.11.2 Overview of Clocking and Interfaces of Audio Front End

The audio front-end of X-GOLDTM110 has the following major operation modes:

- Power-down: All analog parts are in power down and all clocks of the digital part are switched off.
- Audio mode: Digital decimation/interpolation filters are connected to the interface buffers and the analog part is enabled.

These major modes can be modified by certain control register settings.

- Due to the new gain settings in the TX path, the maximum input voltage is limited to 0.8 Vpp.
- In both voiceband paths, the value range for voice samples is confined to 97.5%, i.e. to [-31948, 31947] or [8334H, 7CCBH] in X-GOLDTM110.
- On the TX path, 83% "1"s on the VTPDM line correspond to a 16-bit value of 7CCBH and 17% "1"s correspond to a 16-bit value of 8334H at the digital filter output. Thus the usable range is 66%. This range can be scaled to 100% by Firmware.
- The high-pass functions of the voiceband filters have to be implemented in firmware on TEAKLite®.

3. TECHNICAL BRIEF

3.11.2 Digital Part

The digital part of the X-GOLDTM110 audio front-end comprises an interface to the TEAKLite® bus, interfaces to the interrupt units of TEAKLite®, digital interpolation filters for oversampling digital-to-analog conversion, digital decimation filters for analog-to-digital conversion and an interface to the analog part of the audio front-end.

For the digital microphone all the filtering is done in a dedicated hardware. The output sample stream is then fed in a duplicated ring buffer structure like the data from the analog microphone path (after A/D conversion and subsequent digital filtering).

▪ Interpolation Filter

The interpolation path of the X-GOLD™110 audio front-end increases the sampling rate of the audio samples to the rate of the digital-to-analog converter. Because the input sampling rates can vary between 8 kHz and 47.619 kHz the filter characteristic and oversampling ratio can be adjusted to the respective sampling rate. The requirements for the interpolation filters depend on the sampling rate, because a sufficient out-of-band discrimination in the audio frequency band (20 Hz,...,20 kHz) has to be ensured.

▪ Decimation Filter

The digital decimation filter on X-GOLD™110 has two operating modes: 8 kHz output sampling rate and 16 kHz output sampling rate (or 16 kHz output sample rate and 16kHz bandwidth in case of doubled ASMD clock).

3.11.3 Analog Part

The analog part of the X-GOLD™110 audio front-end in audio-out direction consists of a stereo digital to analog converter (multi-bit oversampling converter) which transforms the output of the digital interpolation filter into analog signals. It is followed by the gain control/amplifier section. The DAC outputs can be switched to several output buffers. In audio-in section there is an input multiplexer which selects either one of two differential microphone inputs to be connected to the low-noise amplifier and analog pre-filter. The signals from the analog pre-filter are input to a second-order sigma-delta analog-to-digital converter. In addition there is a connection for FM-radio playing.

▪ Audio-out Part

The analog audio-out part consists of two multi-bit digital-to-analogue converters (DAC) and an output stage. The signal sources are switched to the output drivers in the output stage. The output drivers consist of: a) one mono, differential class-D Loudspeaker driver, b) one mono, differential Earpiece driver and c) one stereo, single-ended (with uni- or bipolar signals), Headset driver.

▪ Digital-to-analog converters

The multi-bit oversampling DACs of the X-GOLD™110 audio front-end convert the 16-bit data words coming from the digital interpolation filters to analogue signals.

▪ Output Amplifier

The different output buffers in X-GOLD™110 are driven by the outputs of the selection block. The differential earpiece driver can be used to drive a 16 Ω earpiece and works in differential. The two single ended headset drivers can be used to drive a 16 Ω headset. They can work unipolar mode, where an AC coupling of the headset might be needed, or can work also in bipolar mode. The differential loudspeaker driver can be used to drive a 8 Ω loudspeaker. As it is a class-D amplifier the needed suppression of the higher harmonics of the switching signals

has to be achieved by the external circuitry. The buffers are designed to be short circuit protected.

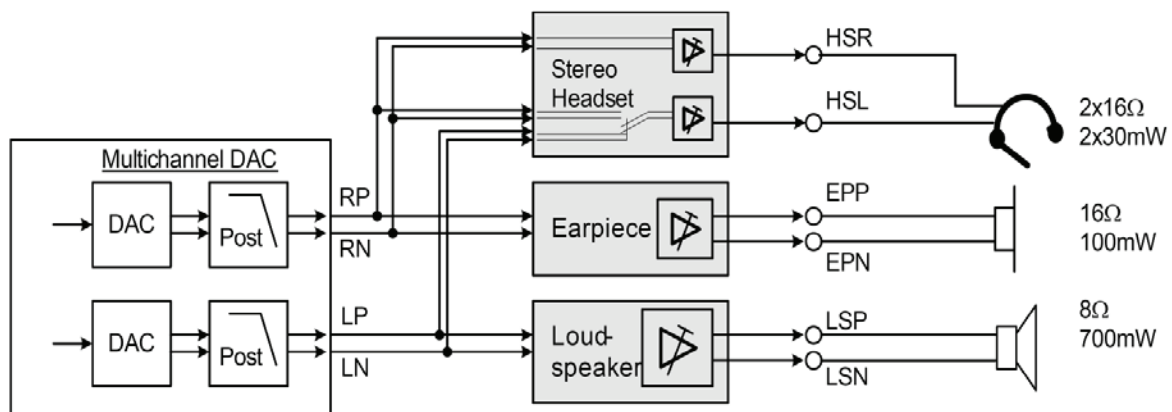


Figure 3.11.3 Switching for R/L DACs onto Buffers

3. TECHNICAL BRIEF

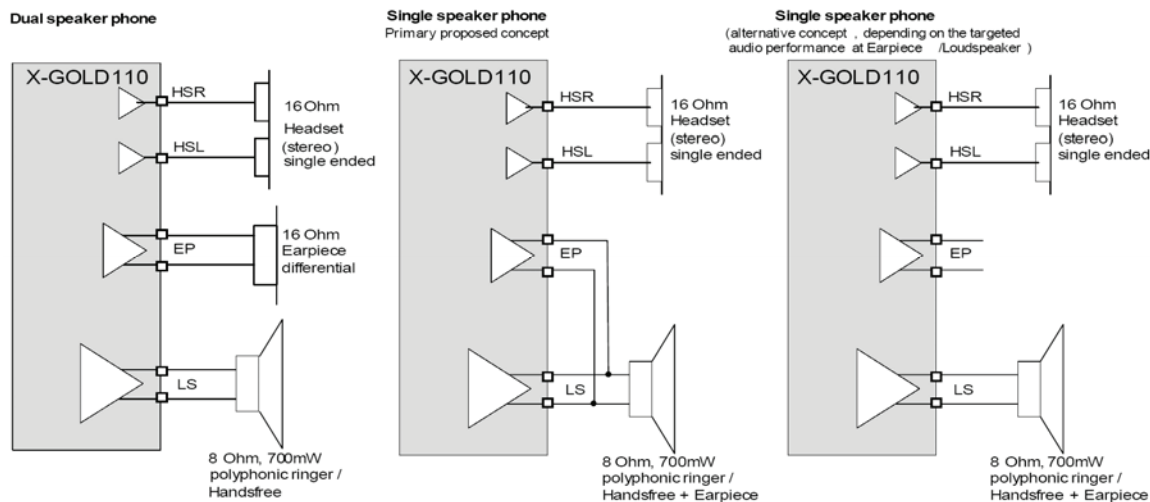


Figure 3.11.4 Different Application Scenarios

In order to achieve the single-speaker concept by parallel connection of Earpiece and Headset amplifier the Earpiece amplifier have to sustain the up to 5 V voltage of the class-D amplifier.

▪ Audio-in Path

The audio-in path of X-GOLD™110 provides two differential microphone input sources, MIC1 and MIC2.

- The inputs for microphone MIC1 are MICP1 and MICN1.
- The inputs for microphone MIC2 are MICP2 and MICN2.

The audio-in path consists of an input selector, a low noise amplifier and following pre-filter with gain control, a second order $\Sigma\Delta$ -converter and a digital decimation filter. It supports both standard GSM (bandwidth 3.5 kHz) and wideband (bandwidth 7 kHz) speech bands.

The differential input signal from the microphone first passes a low noise amplifier and following pre-filter and an anti-aliasing pre-filtering stage achieving and overall variable gain ranging from 0 dB to +39 dB. The signal is then modulated by a second order $\Sigma\Delta$ -converter which is clocked with the same clock rate as the digital to analog converters. The $\Sigma\Delta$ -converter delivers a 1-bit pulse density modulated data stream at a rate of 2 MHz to the digital decimation filter which reduces the rate to 8 kHz or 16 kHz, depending on the current mode.

To improve SNR the sample frequency can be doubled in dedicated modes and the modulated data stream is 4MHz instead of 2 MHz.

▪ Microphone Supply

X-GOLD™213 has a single ended power-supply concept for electret microphones:

For both modes a minimal load capacitance of t.b.d. nF is necessary to guarantee stable operation of the buffer.

The maximal load capacitance must not exceed t.b.d. nF.

2 microphone supplies VMIC and VUMIC are available. The supply VUMIC has a ultra-low-power mode, where the current consumption is minimum, whilst at the same time the noise performance is reduced.

For this purpose the VUMIC is directly supplied out of the VMIC regulator, the Mic-Buffer can be switched off and only the quiescent current of the VMIC regulator is present. This mode can be used to supply a headset and allow accessory detection with highly reduced current consumption For normal operation the supply can be switched to normal operation mode with improved noise performance. In case of an digital microphone VMIC can be used for supplying this microphone.

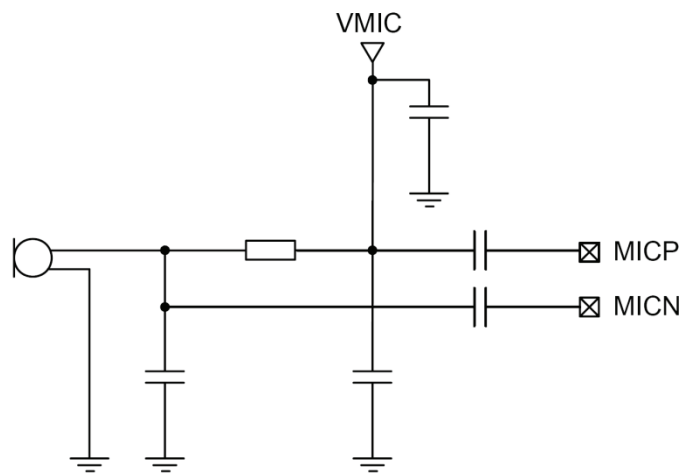


Figure 3.11.5 Typical Microphone Supply Generation (alternative)

3. TECHNICAL BRIEF

3.12 KEY BACKLIGHT LED Interface

Key Backlight LED is controlled by switch (Q202). If KEY_BCKLIGHT is high, Current is flowing from VBAT to LED. Then Light emitted from The LED.

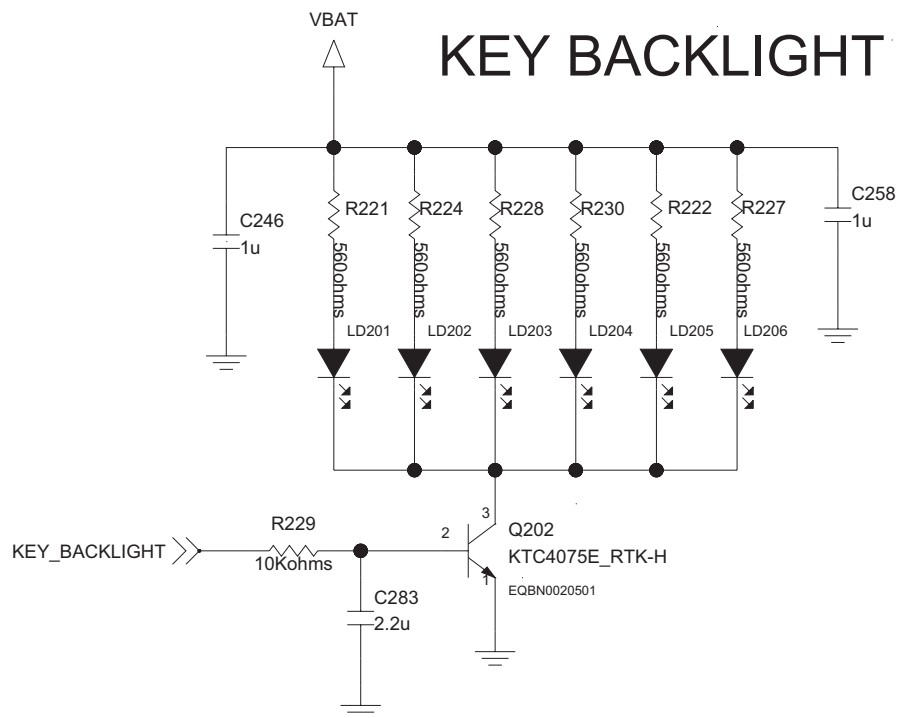


Figure 3.12.1 Key Backlight Block

3.13 Vibrator Interface

Support PWM signal which generated by hardware itself via register control .

Direct connect to the VIB and VSSVIB pin from XMM110 without any external component required.

It is capable to driver the vibrator motor up to 150mA

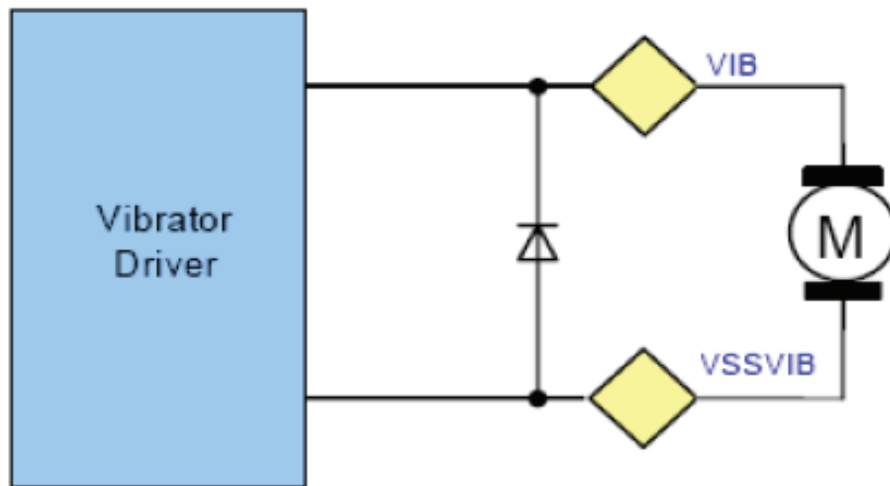


Figure 3.13.1 Vibrator Driver Block Diagram

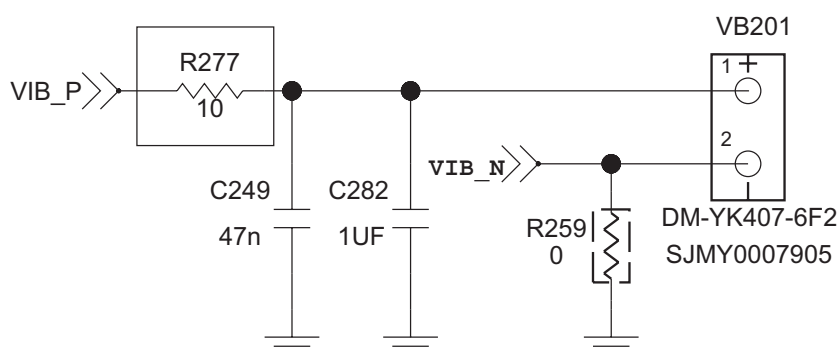


Figure 3.13.2 Vibrator Driver Block

3. TECHNICAL BRIEF

3.14 Torch LED

Support Torch LED which used to flash and lanterns.

U406 LDO support torch LED driving current up to 150mA.

TORCH_EN signal controls U406 LDO.

TORCH LDO

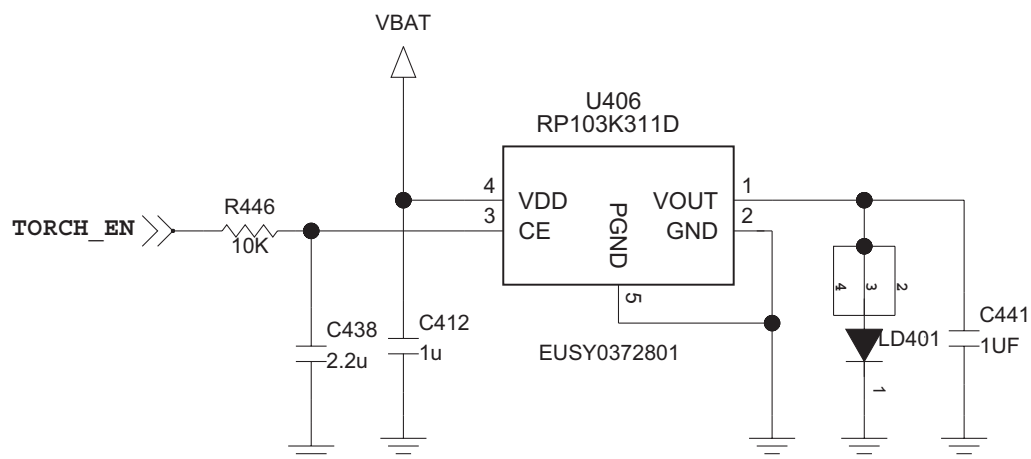


Figure 3.14.1 Torch block

3.15 Camera Interface(AIT701U , U405)

The AIT701U is a highly integrated versatile multi-media processor for image-enabled mobile.

And handheld devices, such as cellular phones and PDA, AIT 701U includes and 8-bit micro- controller, frame/display memory, real-time JPEGCODEC, 2D-Graphic Engine, SD storage interface, LCD Display Interface, and USB interface.

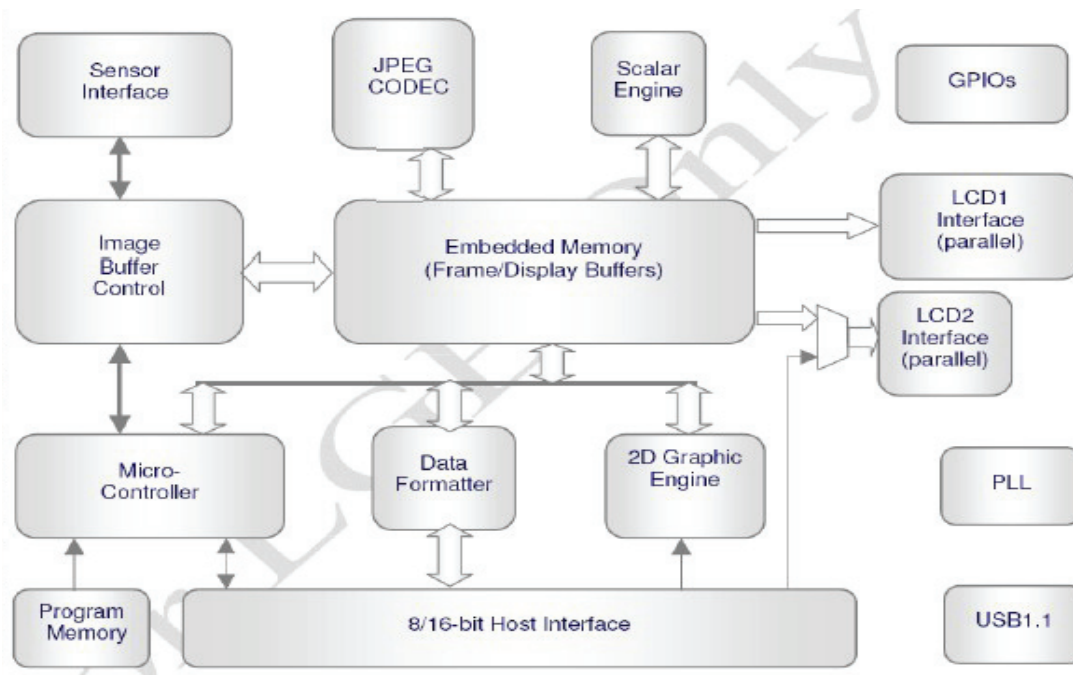


Figure 3.15.1 AIT716 BLOCK DIAGRAM

3. TECHNICAL BRIEF

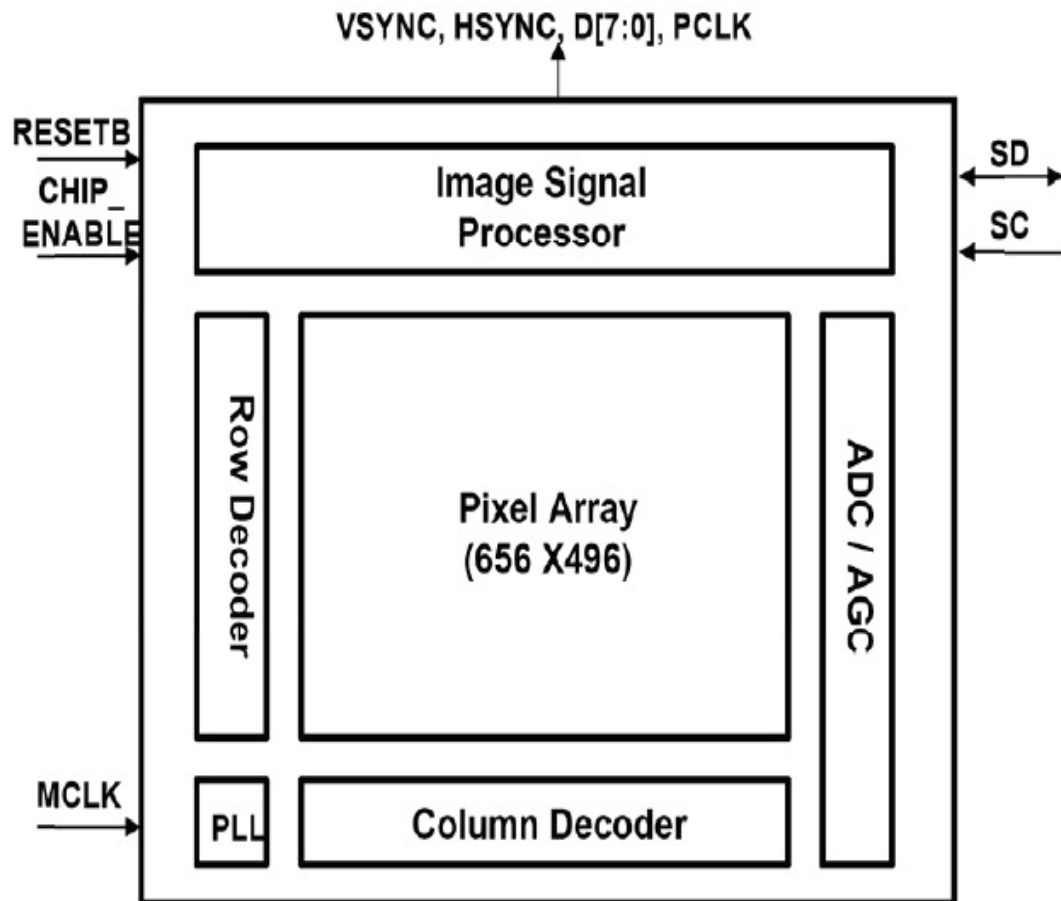


Figure 3.15.2 SENSOR SHIP BLOCK DIAGRAM

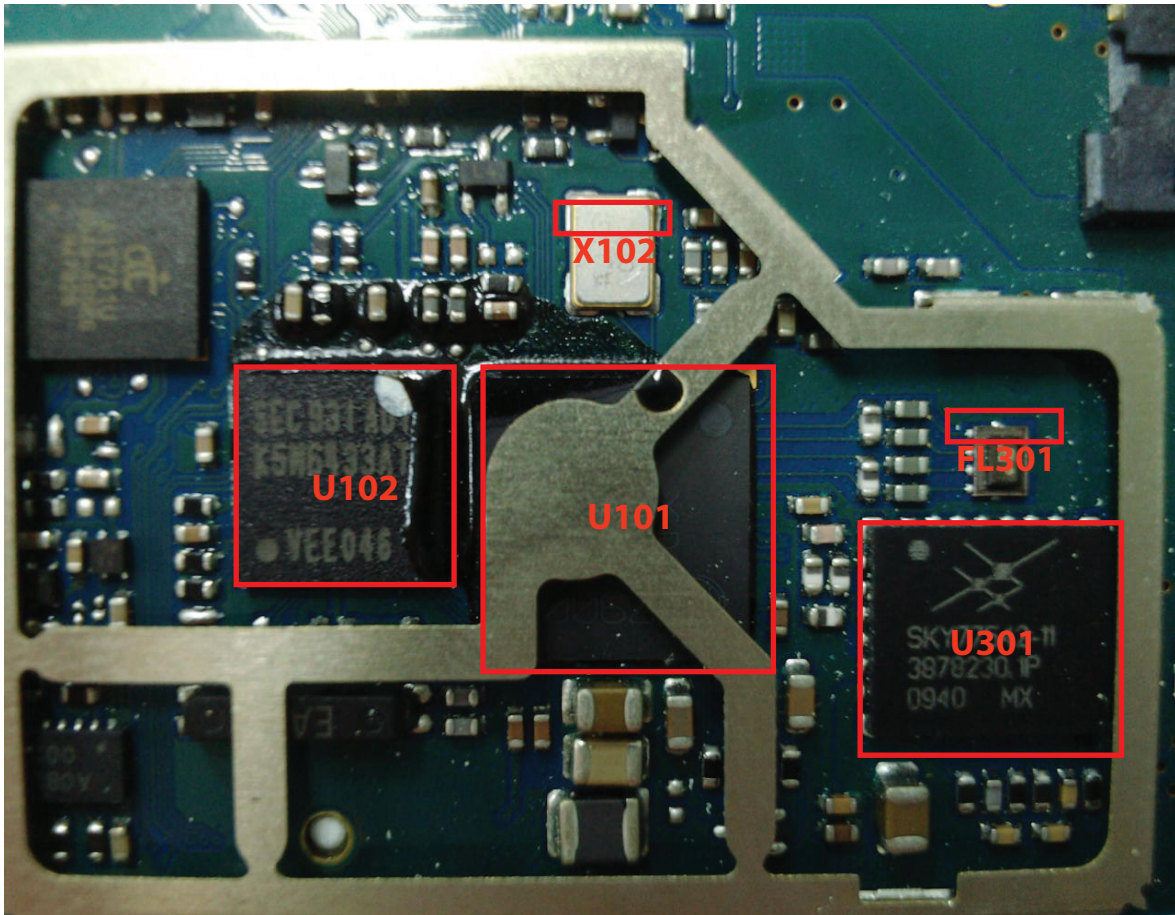
CAMERA CTL IC



4. TROUBLE SHOOTING

4. TROUBLE SHOOTING

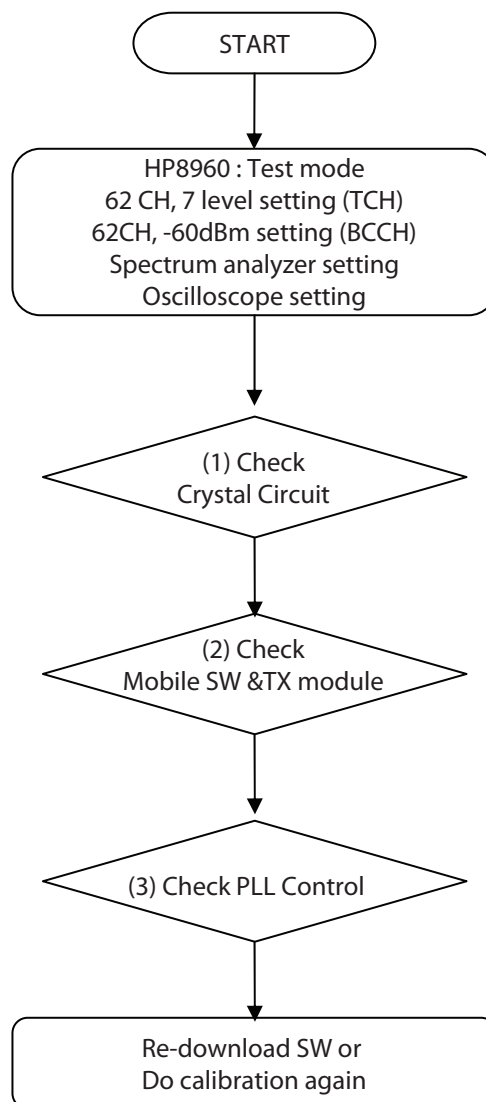
4.1 RF Component



U101	Main Chip (EGV3)
U102	Memory
U301	FEM (Tx Module)
FL301	SAW Filter
X101	Crystal, 26MHz Clock

4.2 RX Trouble

CHECKING FLOW



4. TROUBLE SHOOTING

(1) Checking Crystal Circuit

TEST POINT

1 pin : 26MHz
X102

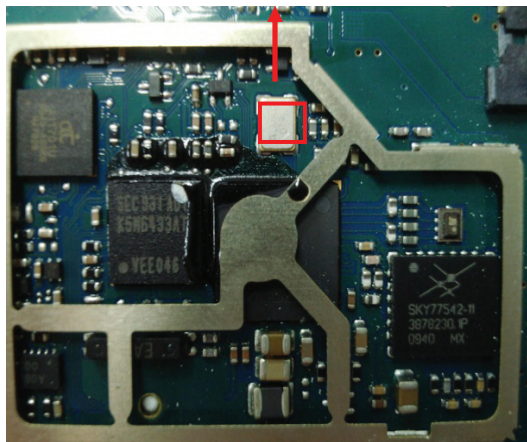
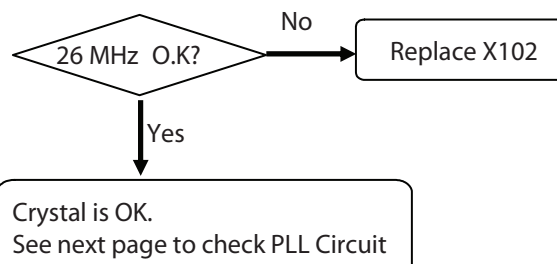


Figure 4.2.1

CHECKING FLOW



CIRCUIT

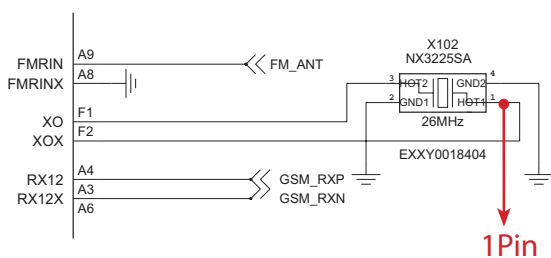


Figure 4.2.2

WAVEFORM

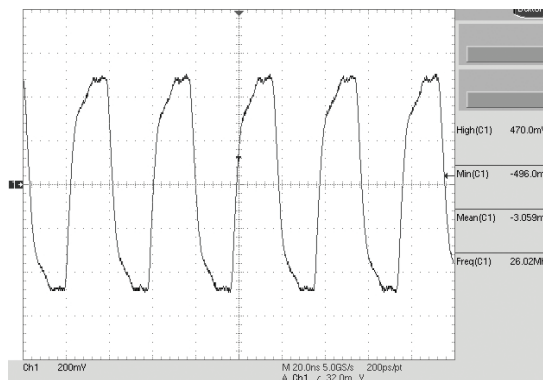


Figure 4.2.3

4. TROUBLE SHOOTING

(2) Checking Mobile SW &FEM

TEST POINT

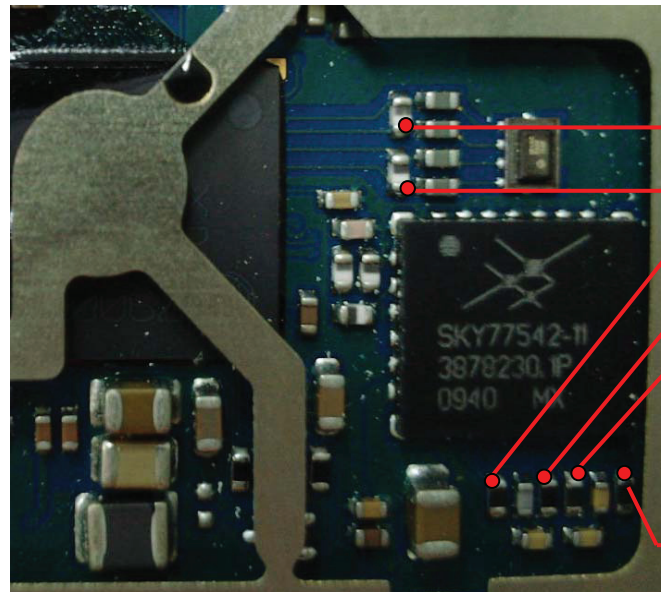
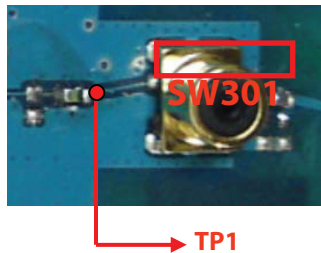
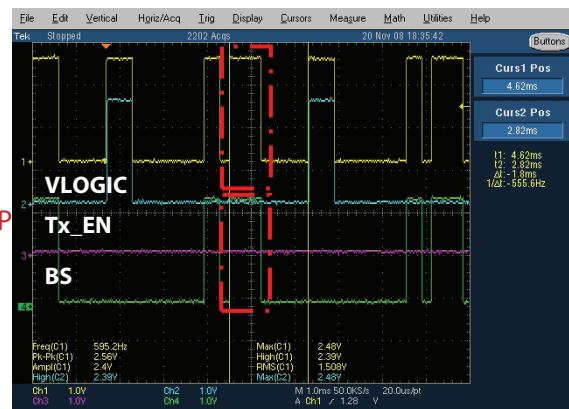
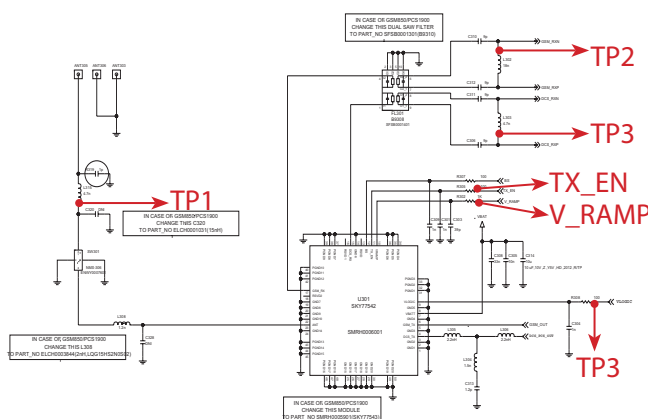


Figure 4.2.4

CIRCUIT

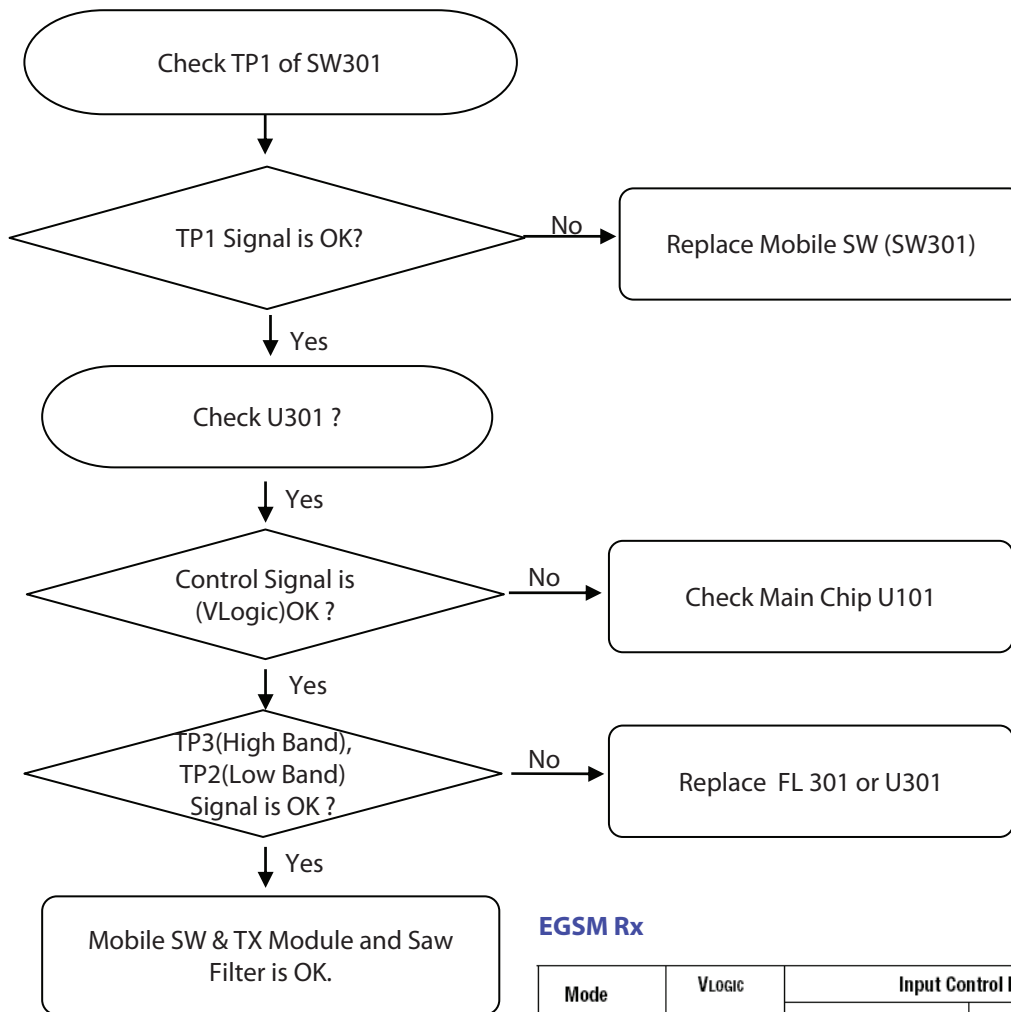
CONTROL LOGIC

EGSM Rx



4. TROUBLE SHOOTING

CHECKING FLOW



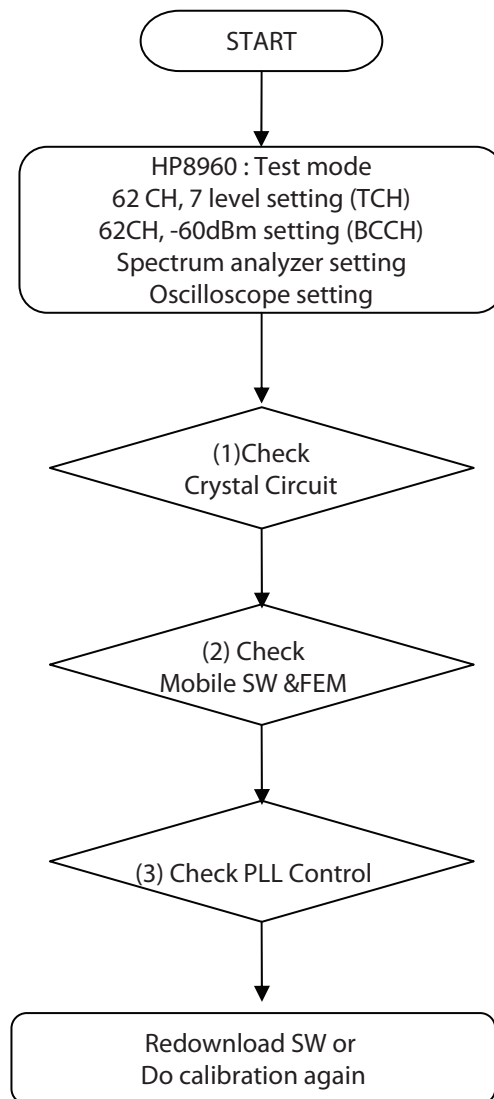
EGSM Rx

Mode	VLOGIC	Input Control Bits	
		Tx_EN	BS
STANDBY	0	x ¹	x ¹
GSM_Rx	1	0	0
DCS_Rx	1	0	1
GSM_Tx	1	1	0
DCS_Tx	1	1	1

¹ X = don't care

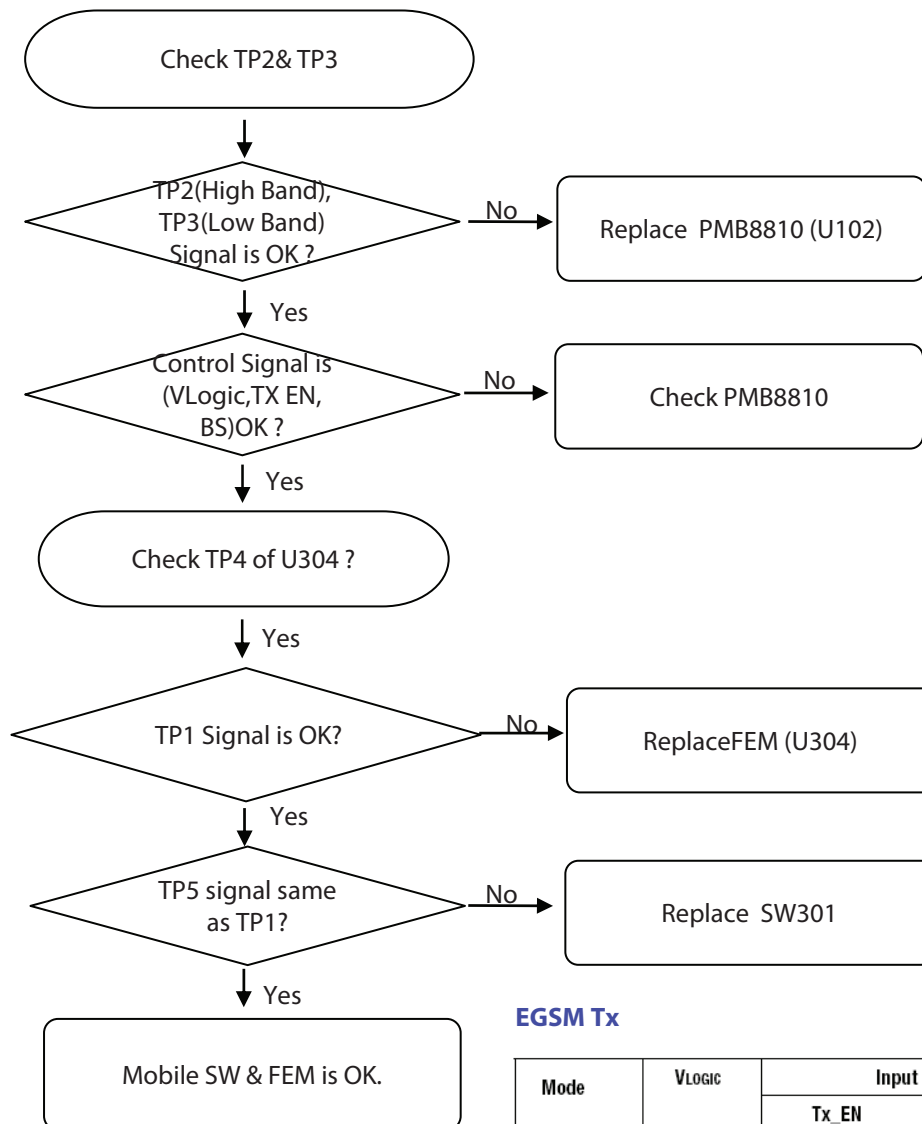
4.3 TX Trouble

CHECKING FLOW



4. TROUBLE SHOOTING

CHECKING FLOW



EGSM Tx

Mode	VLogic	Input Control Bits	
		Tx_EN	BS
STANDBY	0	X ¹	X ¹
GSM_Rx	1	0	0
DCS_Rx	1	0	1
GSM_Tx	1	1	0
DCS_Tx	1	1	1

¹ X = don't care

4.4 Power On Trouble

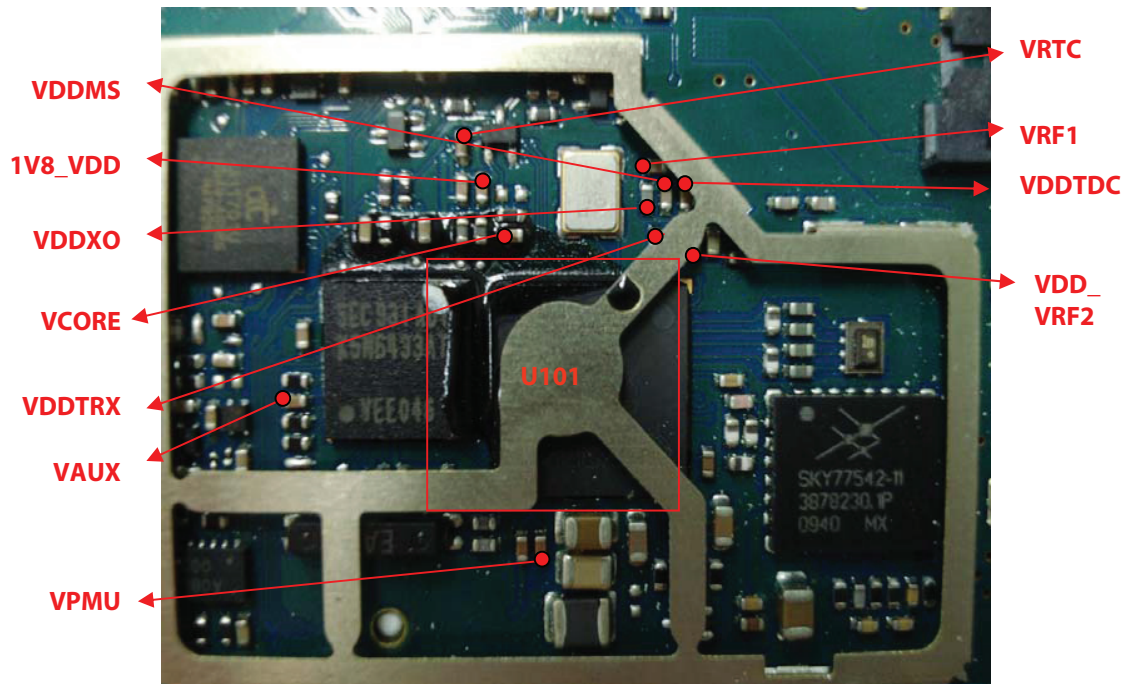


Figure 4.4.1

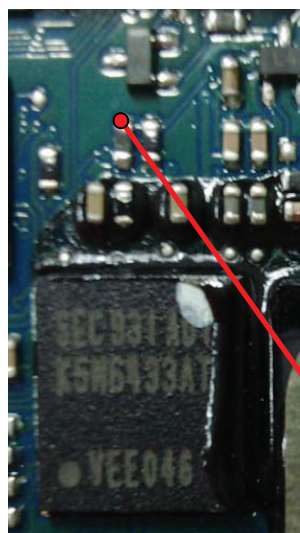


Figure 4.4.2

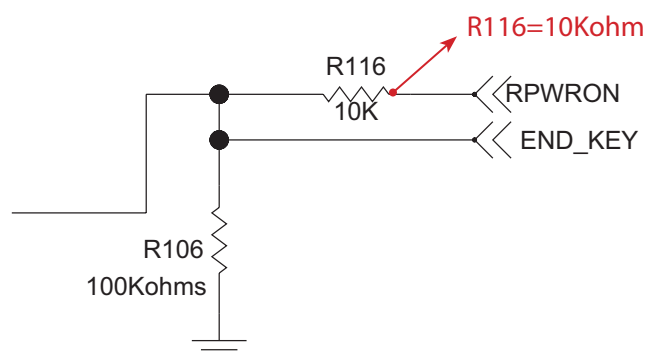


Figure 4.4.3 Remote power on

4. TROUBLE SHOOTING

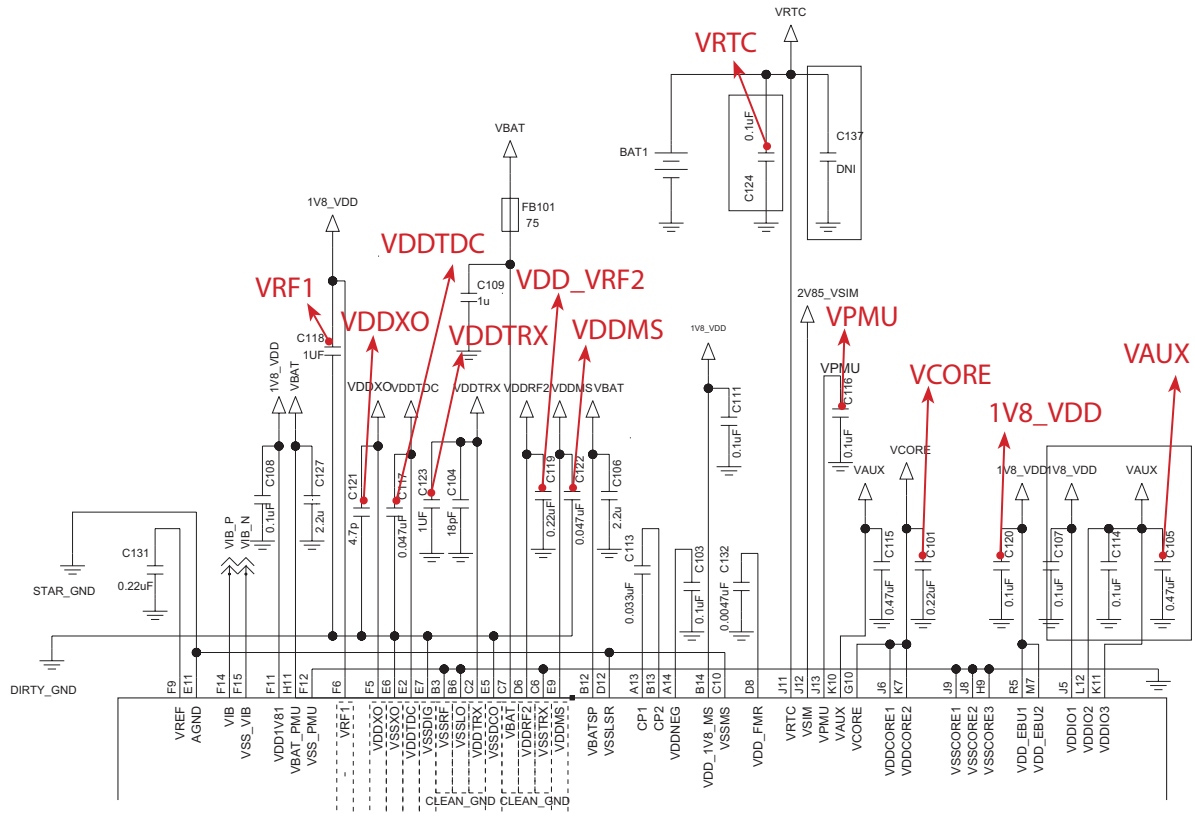
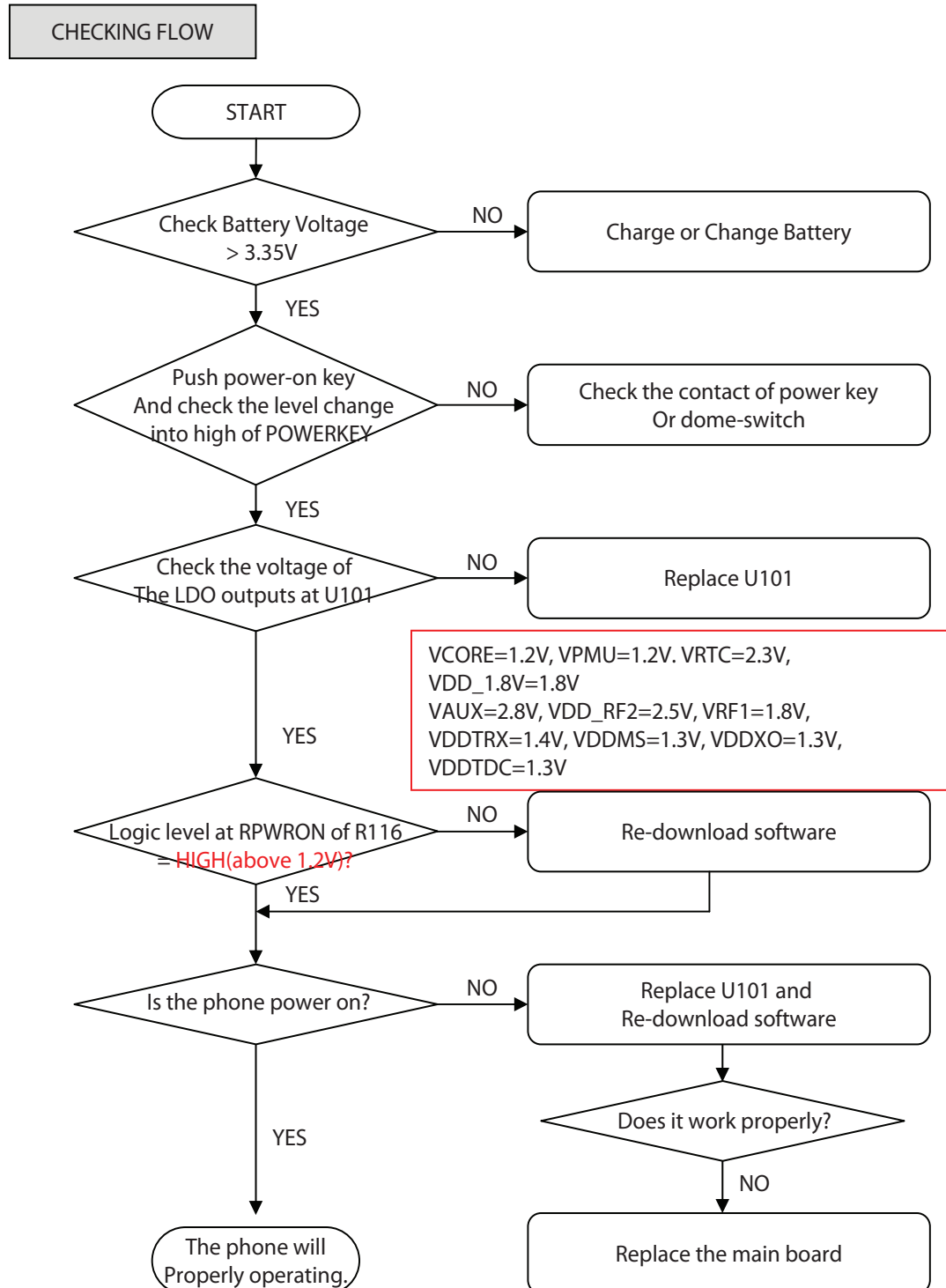


Figure 4.4.4 power block of GS108

4. TROUBLE SHOOTING

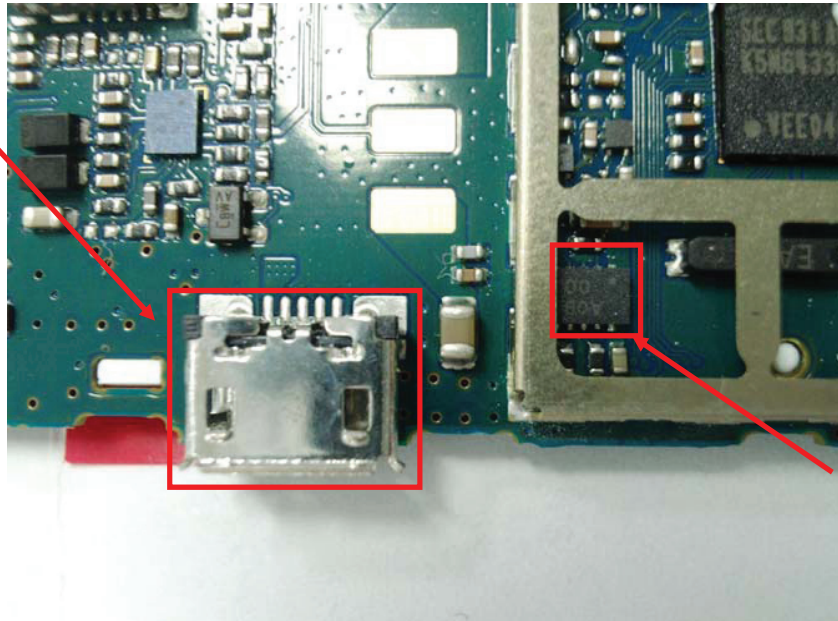


4. TROUBLE SHOOTING

4.5 Charging Trouble

TEST POINT

CN201

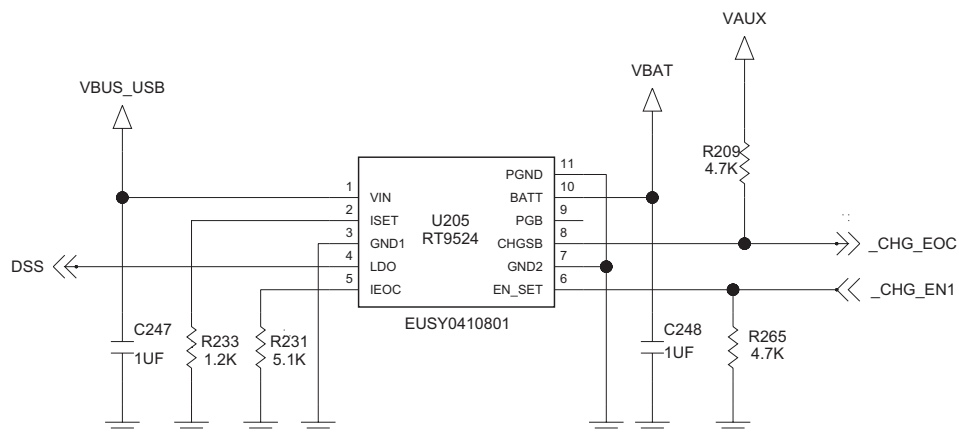


U205

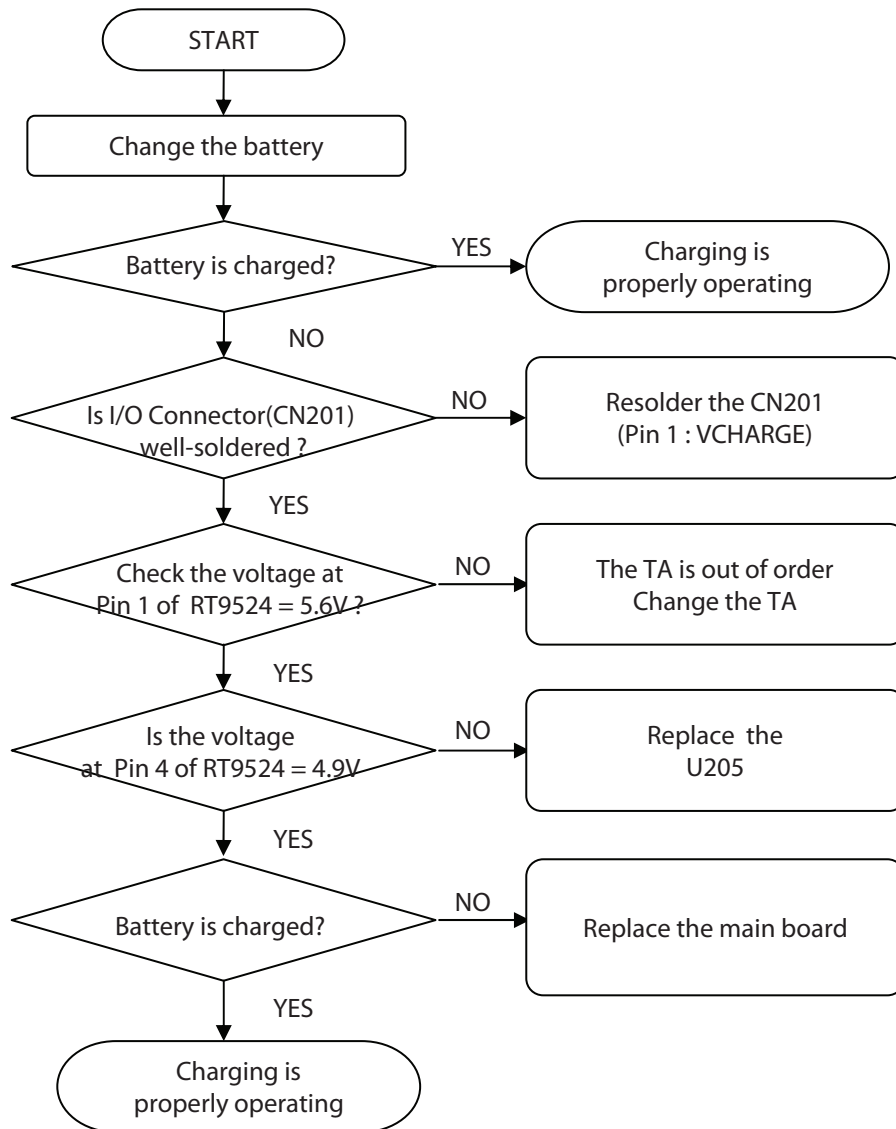
Figure 4.5.1

CIRCUIT

Single Charging IC for uUSB



CHECKING FLOW



4. TROUBLE SHOOTING

4.6 Vibrator Trouble

TEST POINT

Vibrator PAD

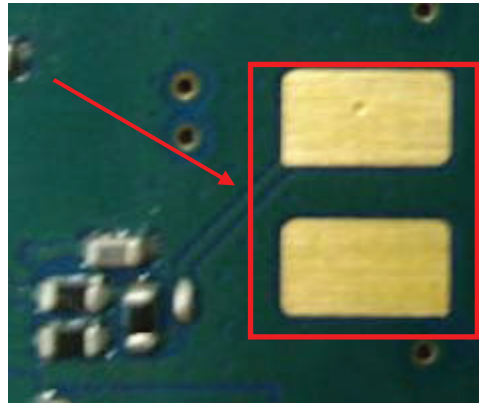


Figure 4.6.1

CIRCUIT

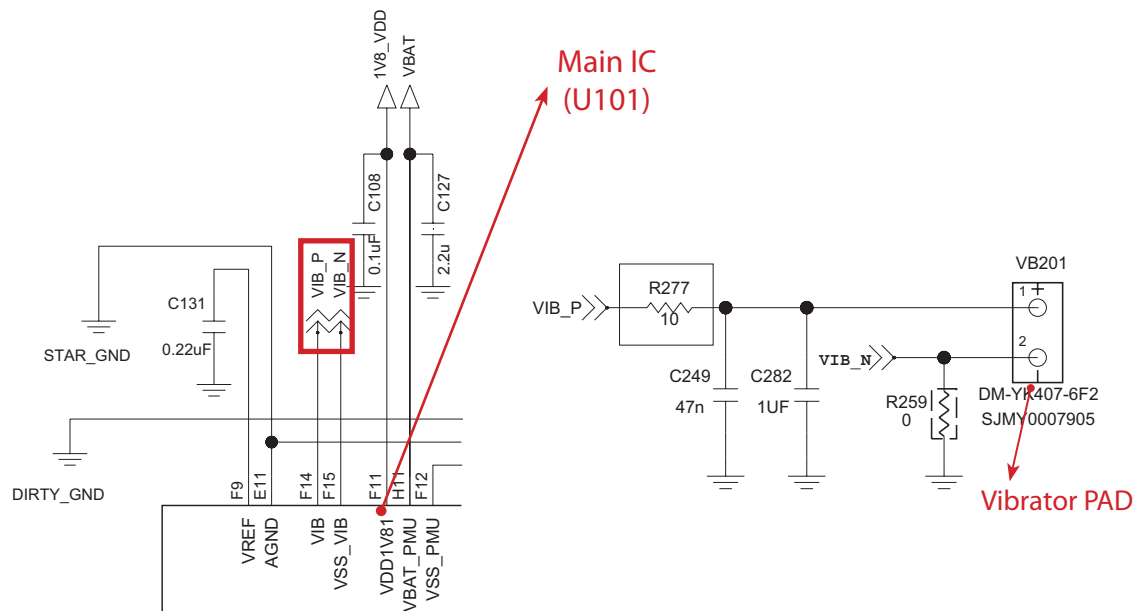
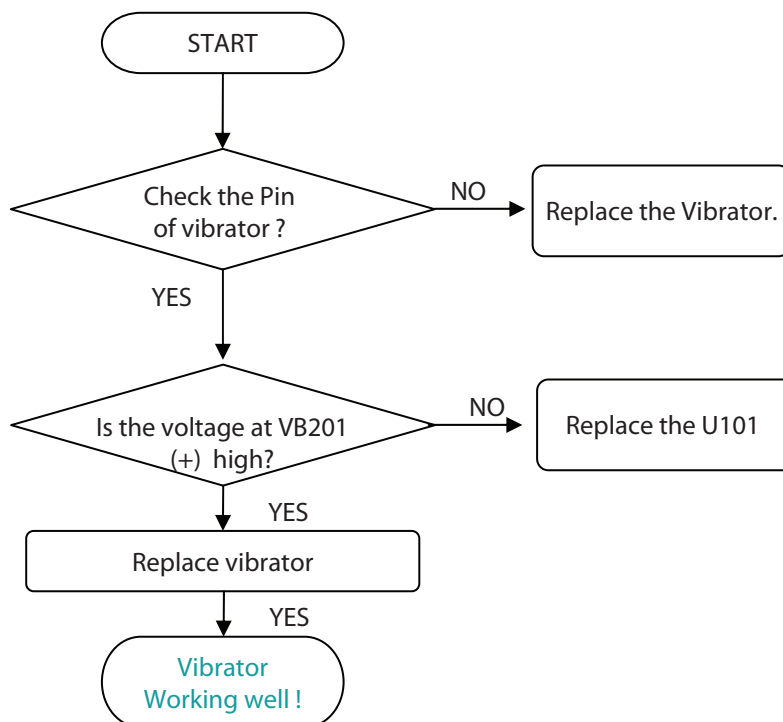


Figure 4.6.2

4. TROUBLE SHOOTING

CHECKING FLOW

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



4. TROUBLE SHOOTING

4.7 LCD Trouble

TEST POINT

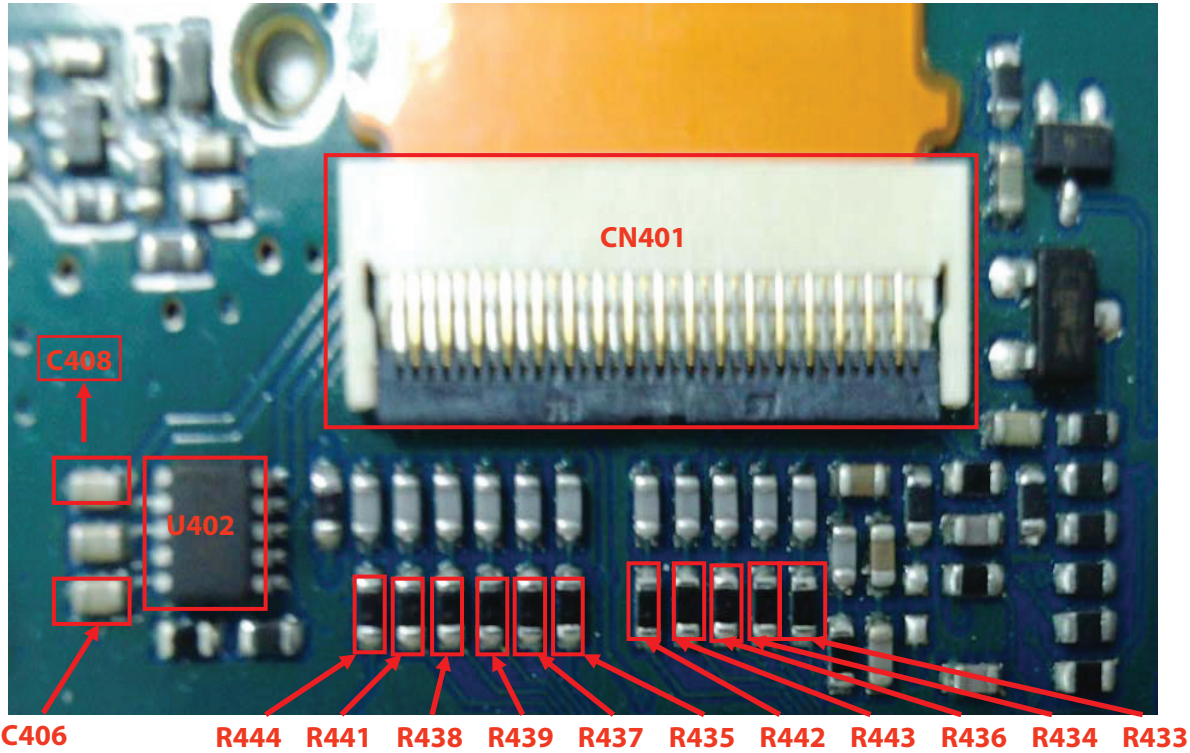


Figure 4.7.1

4. TROUBLE SHOOTING

CIRCUIT

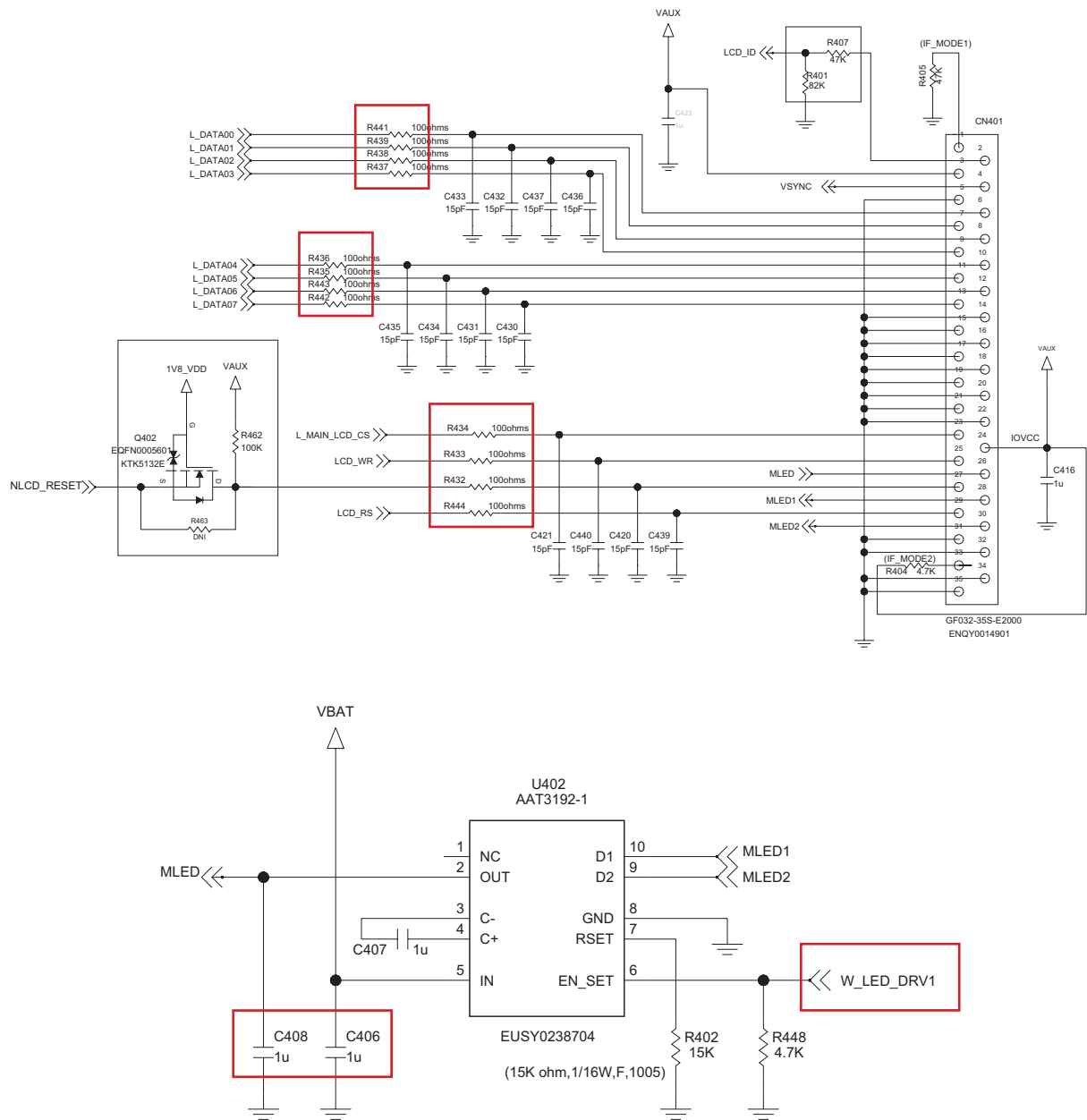
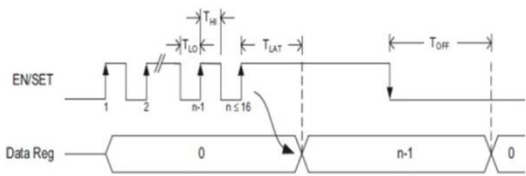


Figure 4.7.2

Waveform

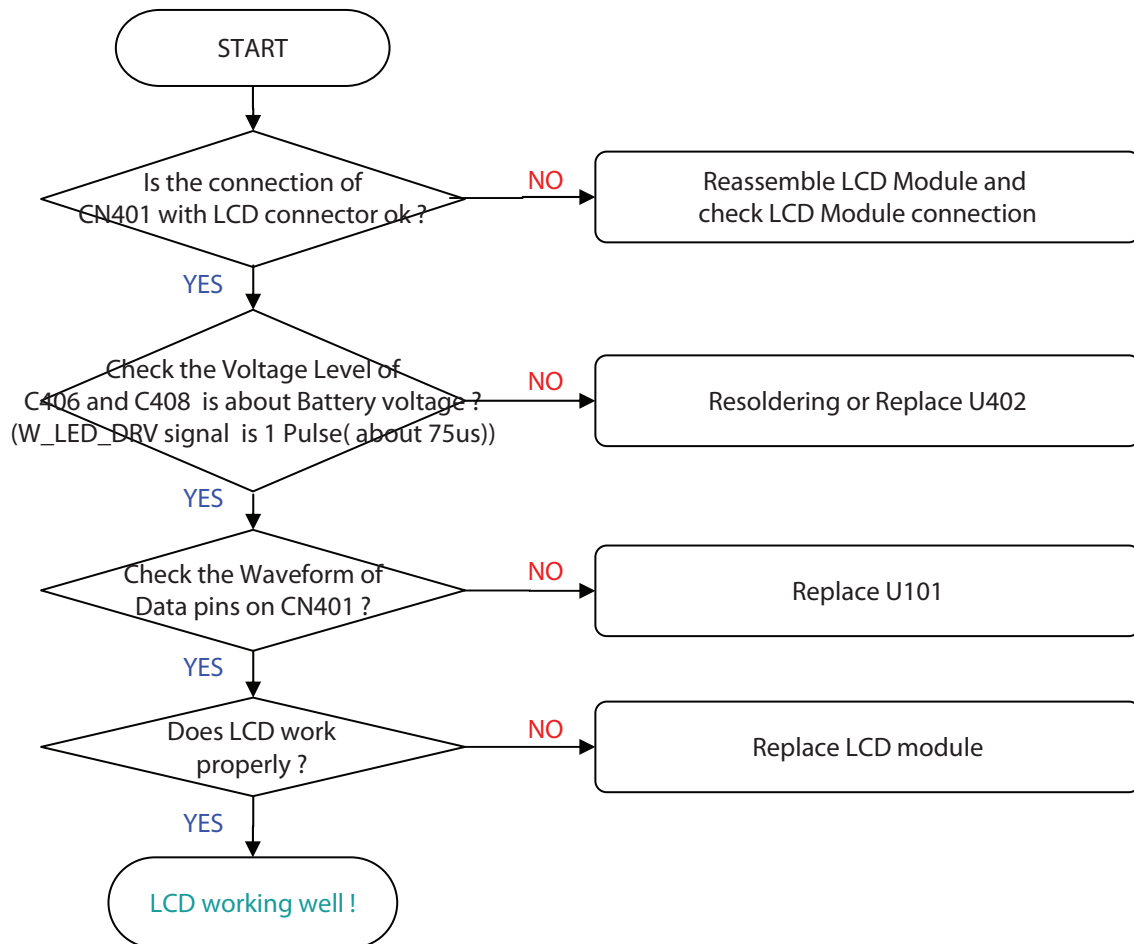


Data	EN Rising Edges	D1-D2 Current (mA)
1	1	20
2	2	18.7
3	3	17.3
4	4	16
5	5	14.7
6	6	13.3
7	7	12
8	8	10.7
9	9	9.3
10	10	8
11	11	6.7
12	12	5.3
13	13	4
14	14	2.7
15	15	1.3
16	16	0.63

Graph 4.7.1. LCD Backlight Dimming Control Signal Waveform



CHECKING FLOW



4. TROUBLE SHOOTING

4.8 Speaker Trouble

TEST POINT

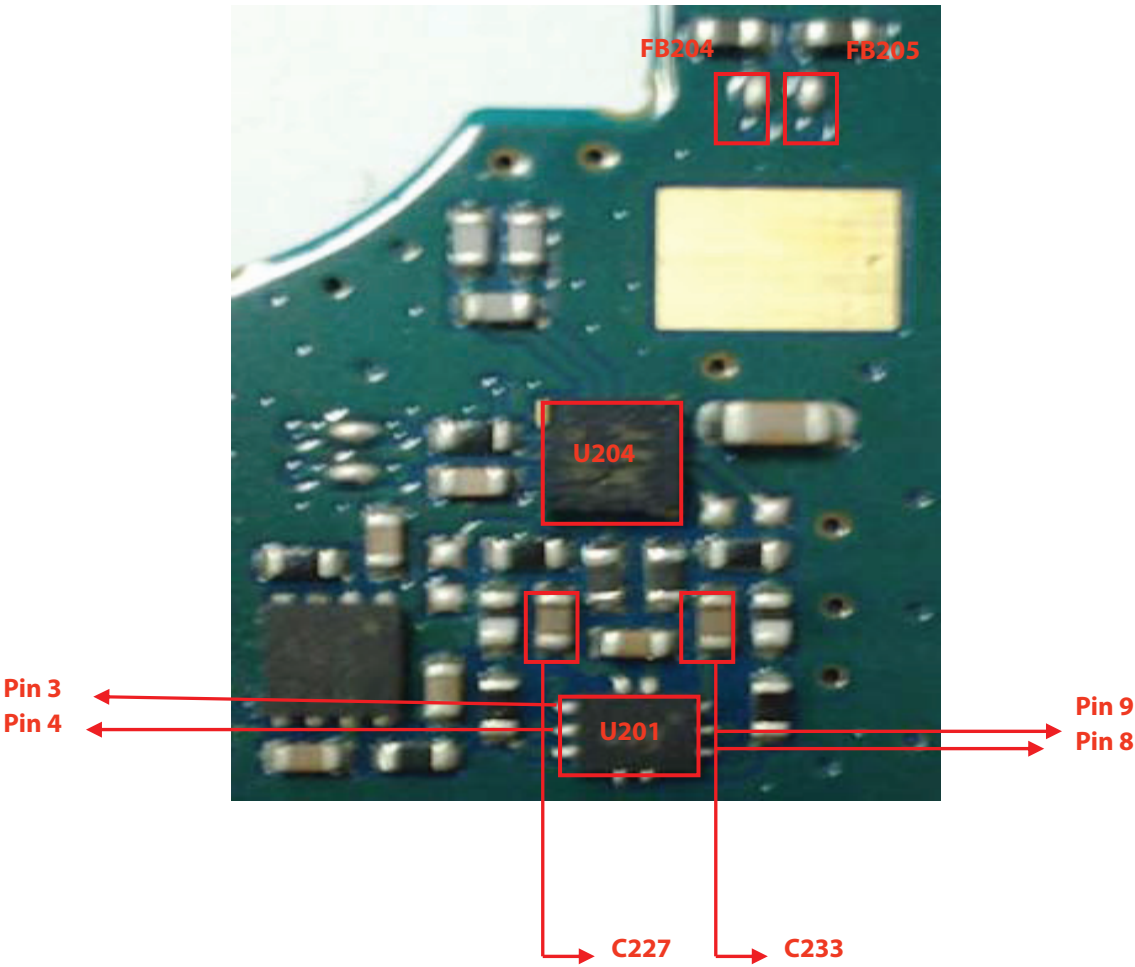
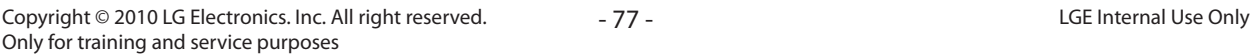


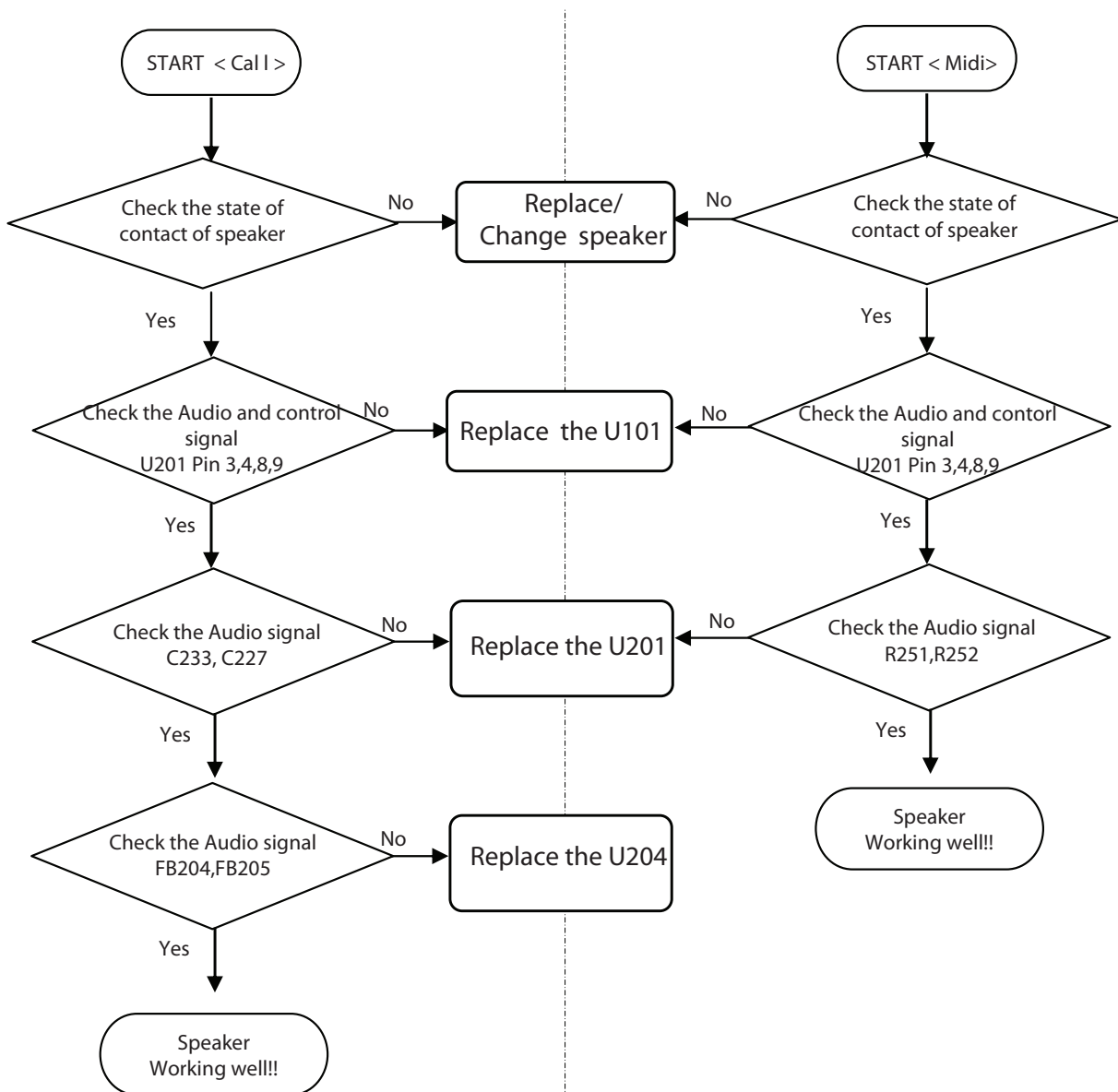
Figure 4.8.1

CIRCUIT



4. TROUBLE SHOOTING

CHECKING FLOW



4.9 Earphone Trouble

TEST POINT

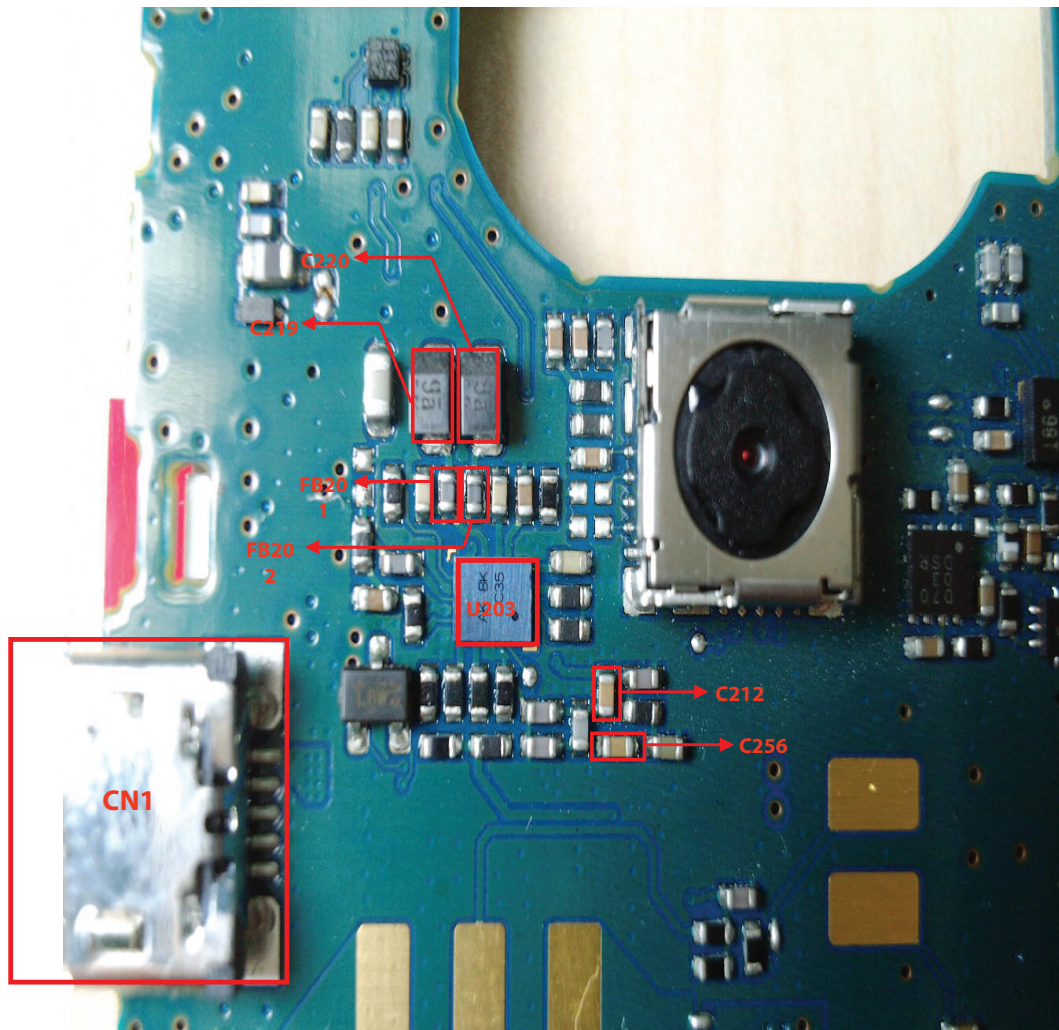
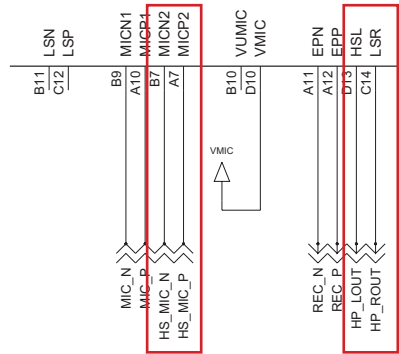


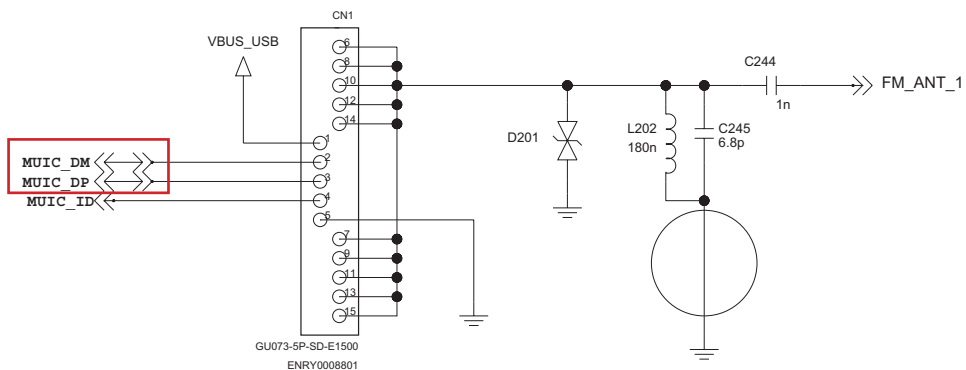
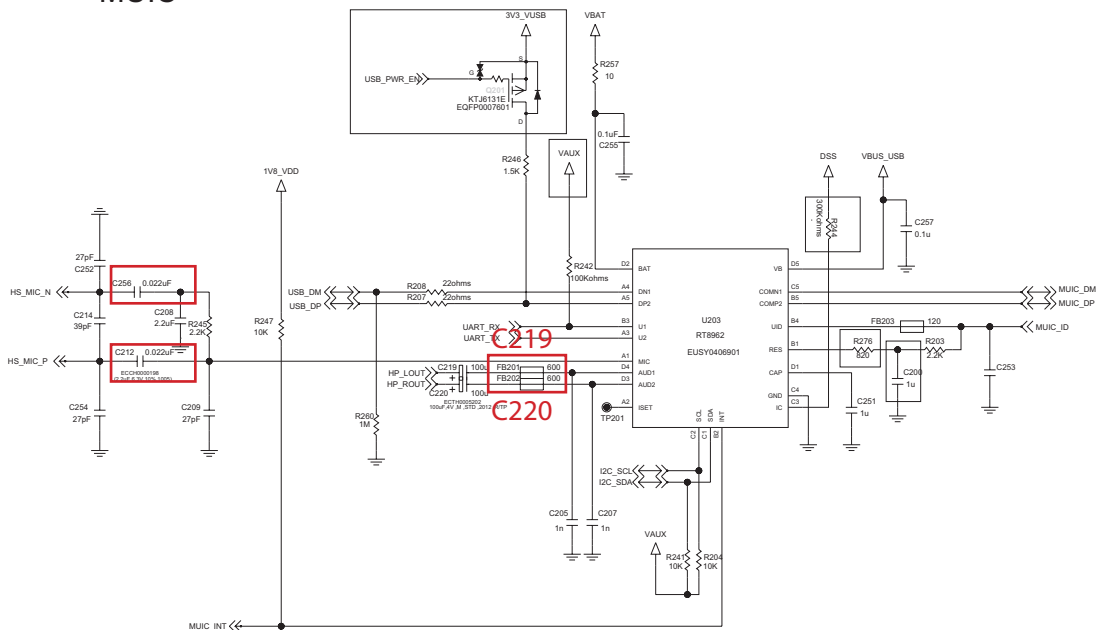
Figure 4.9.1

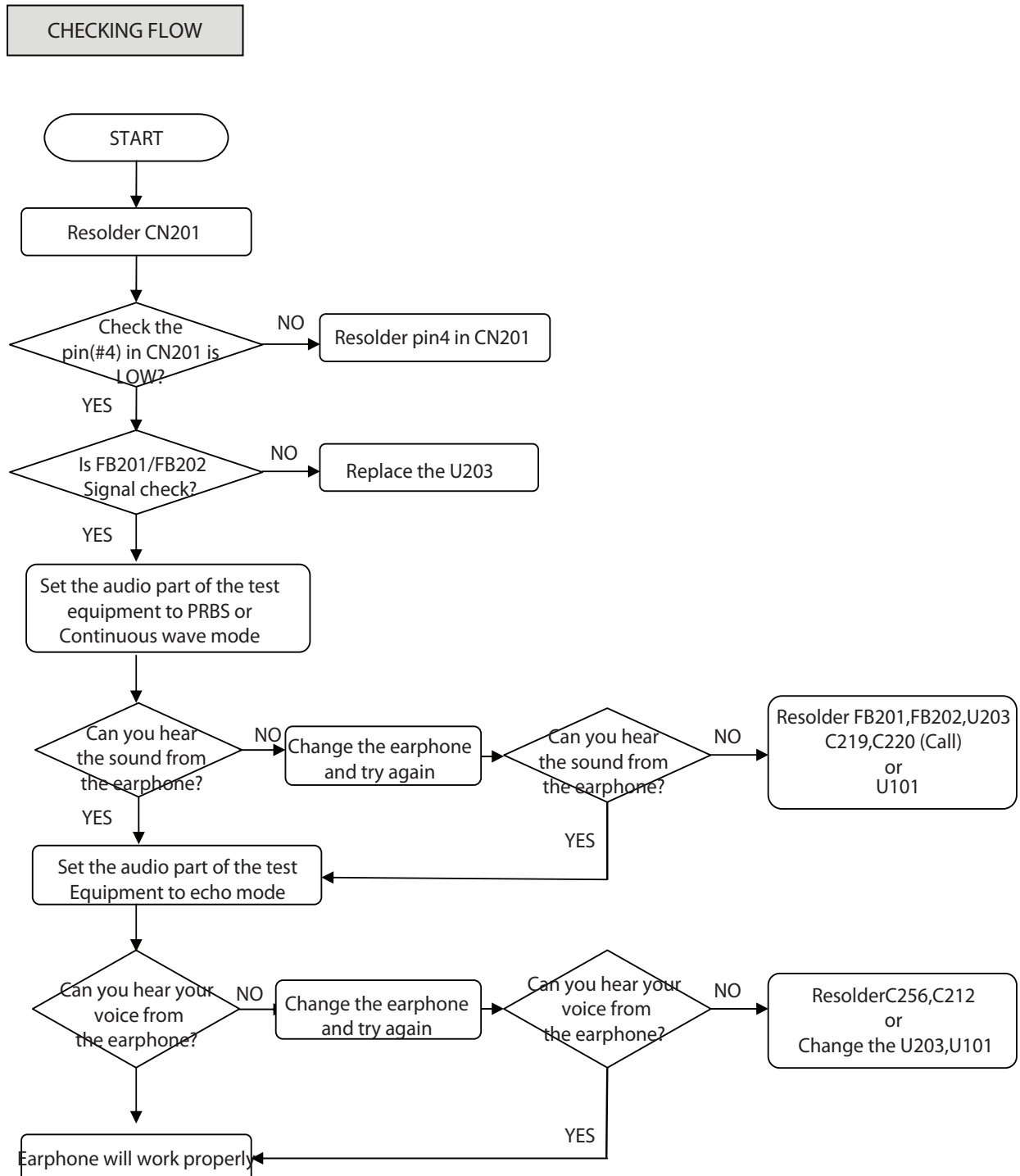
4. TROUBLE SHOOTING

CIRCUIT



MUIC





4. TROUBLE SHOOTING

4.10 Microphone Trouble

TEST POINT

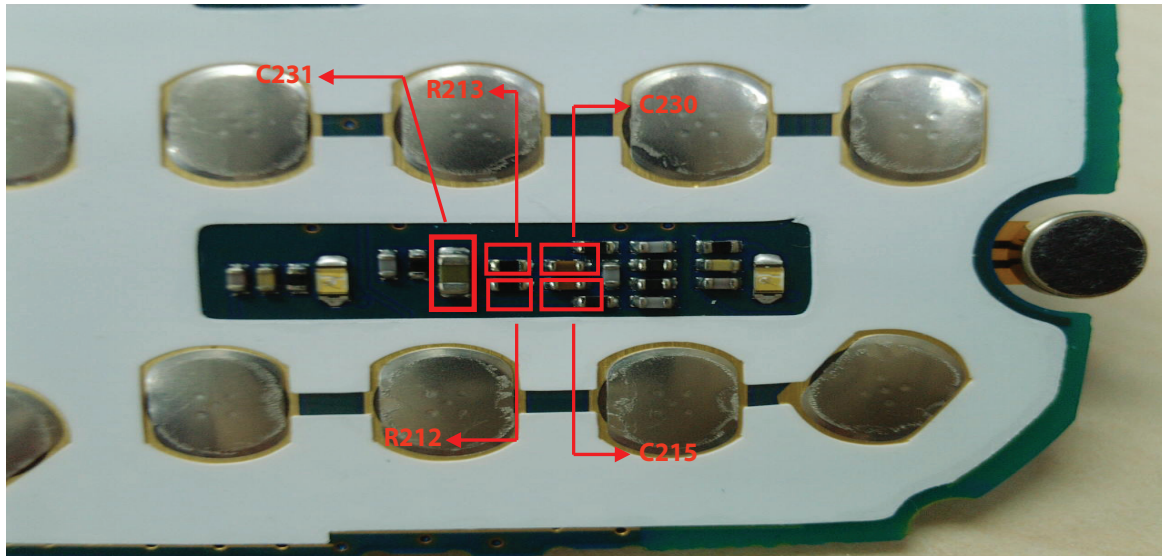
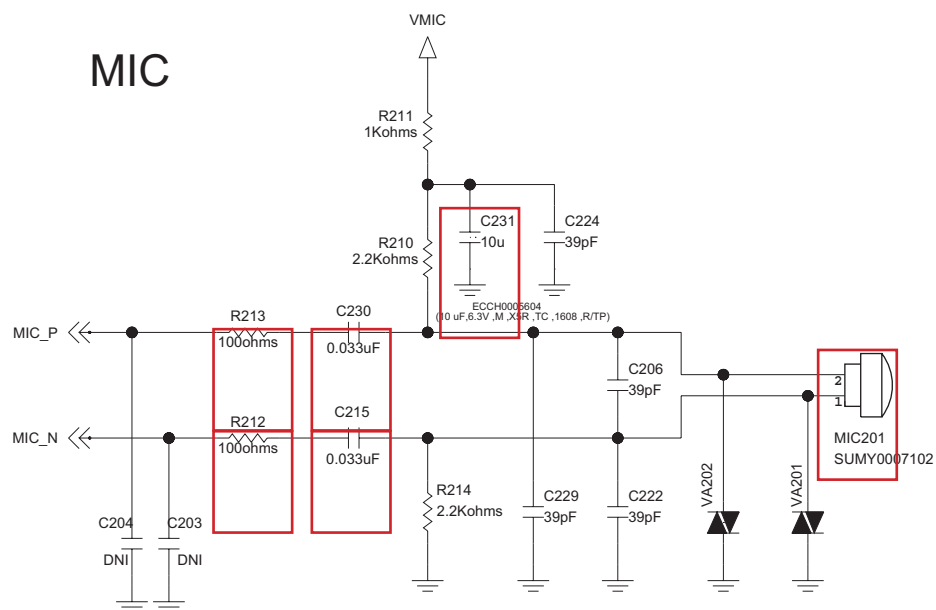


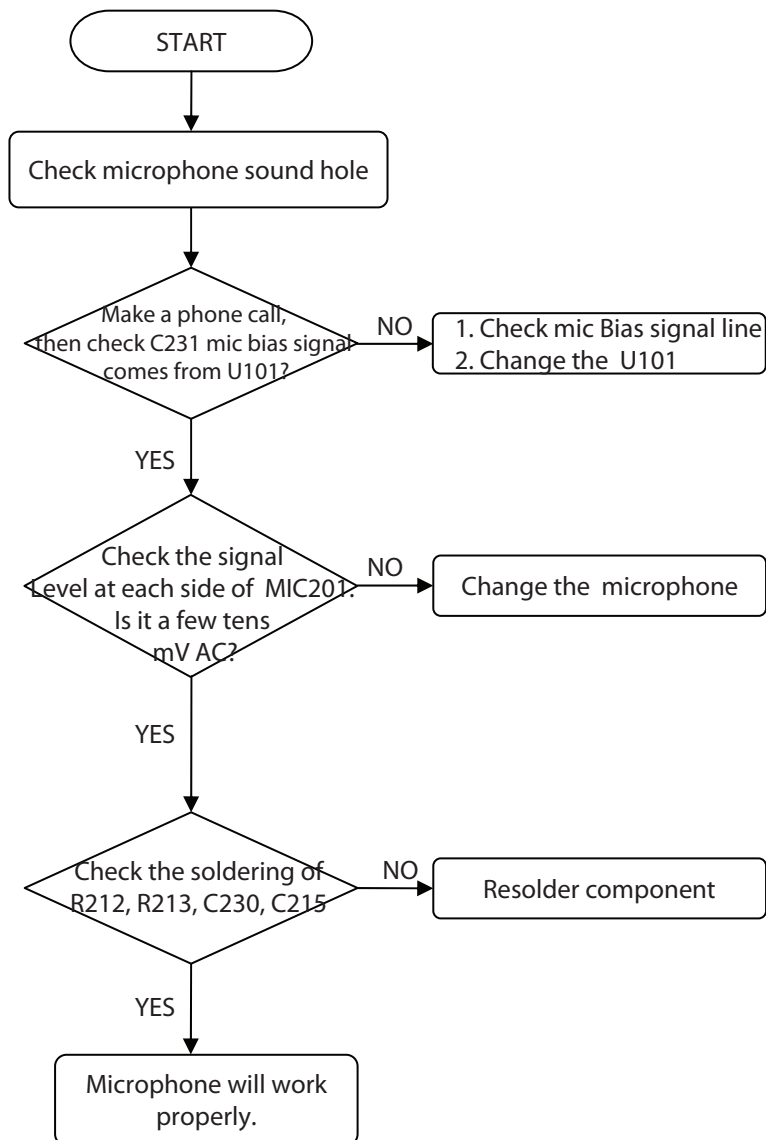
Figure 4.10.1

CIRCUIT



CHECKING FLOW

SETTING : After initialize Agilent 8960, Test EGSM900, DCS mode (or GSM850, PCS mode)



4. TROUBLE SHOOTING

4.11 SIM Card Interface Trouble

TEST POINT

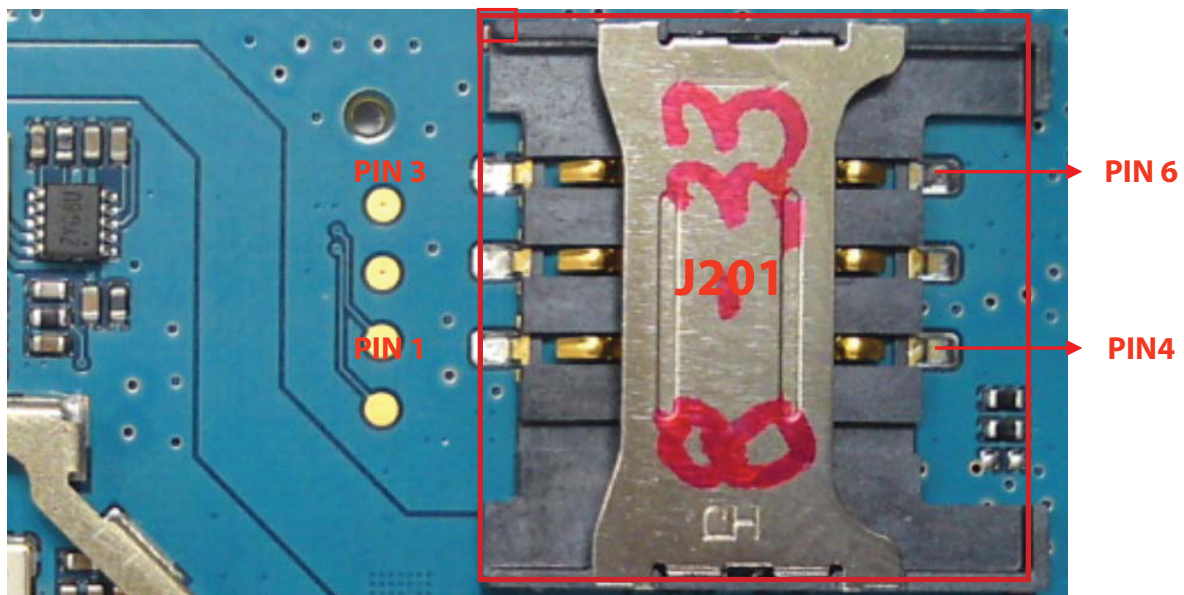
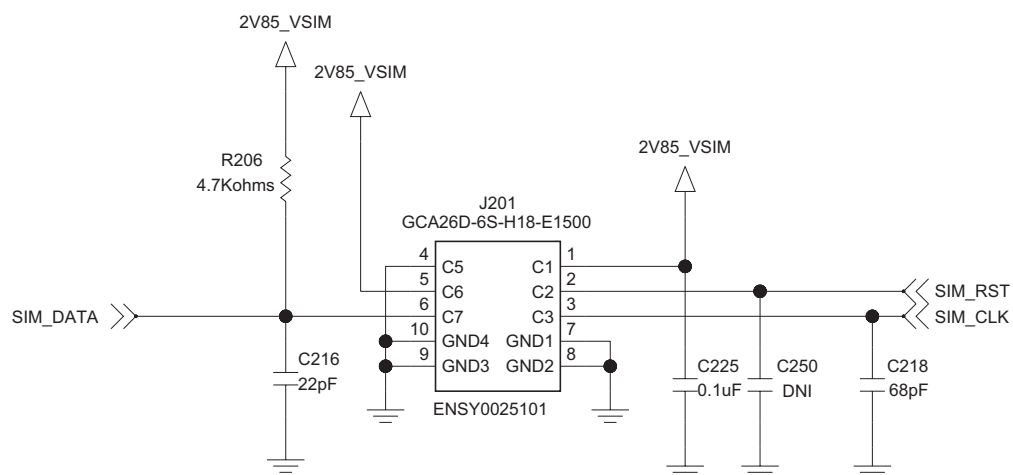
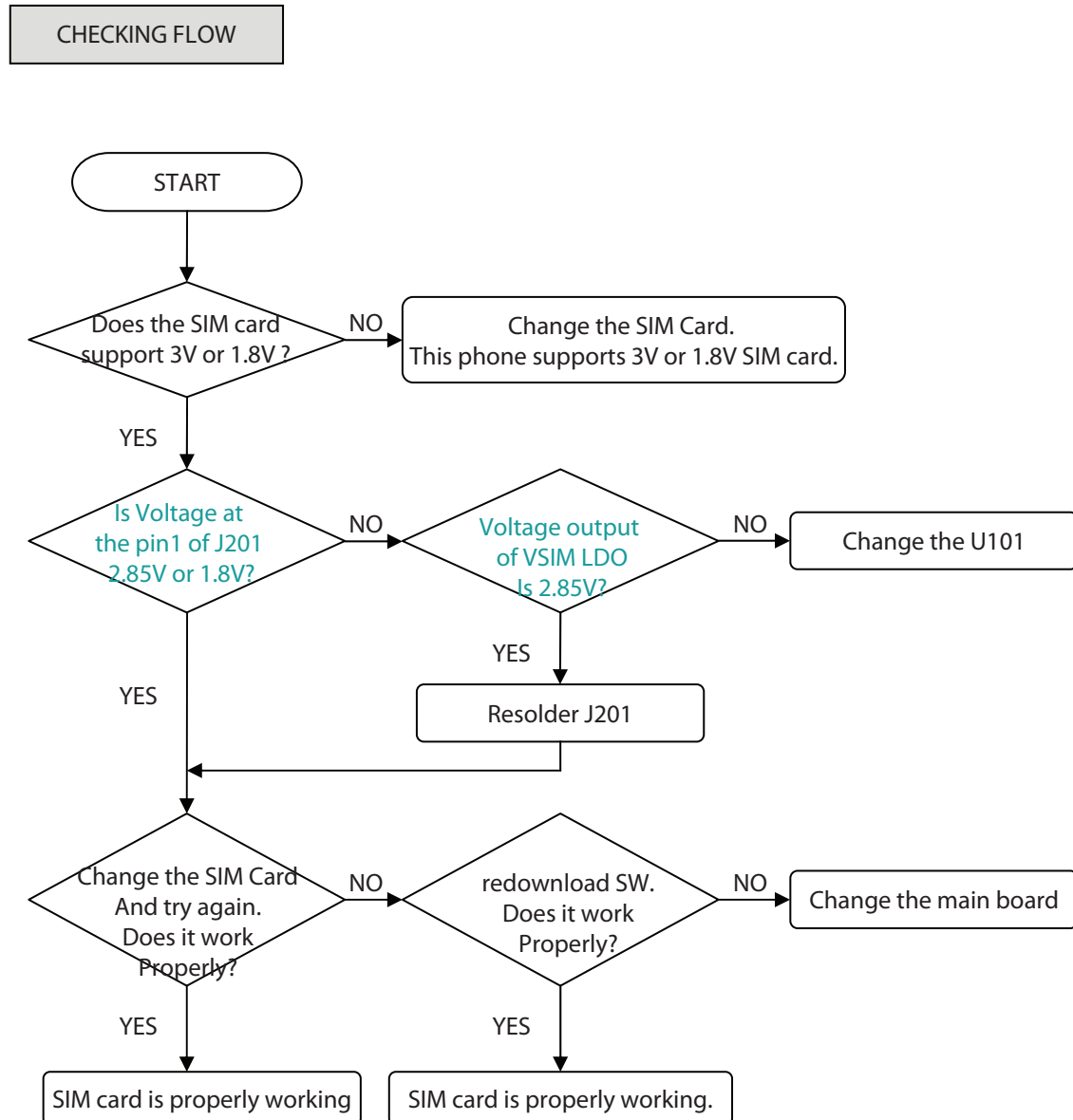


Figure 4.11.1

CIRCUIT

SIM_CONNECTOR





4. TROUBLE SHOOTING

4.12 KEY backlight Trouble

TEST POINT

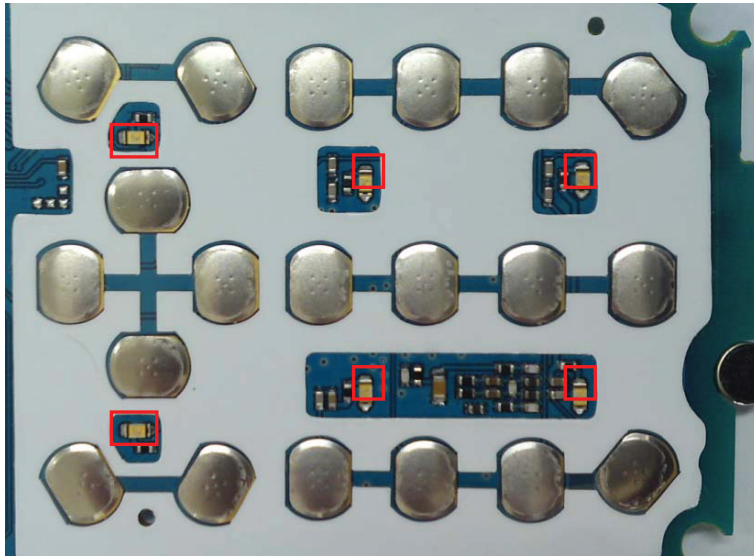
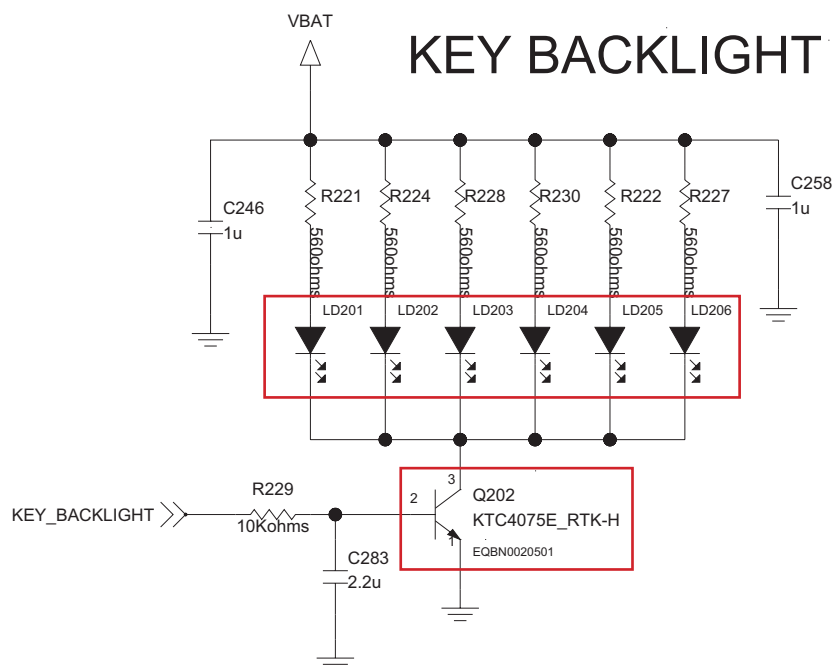
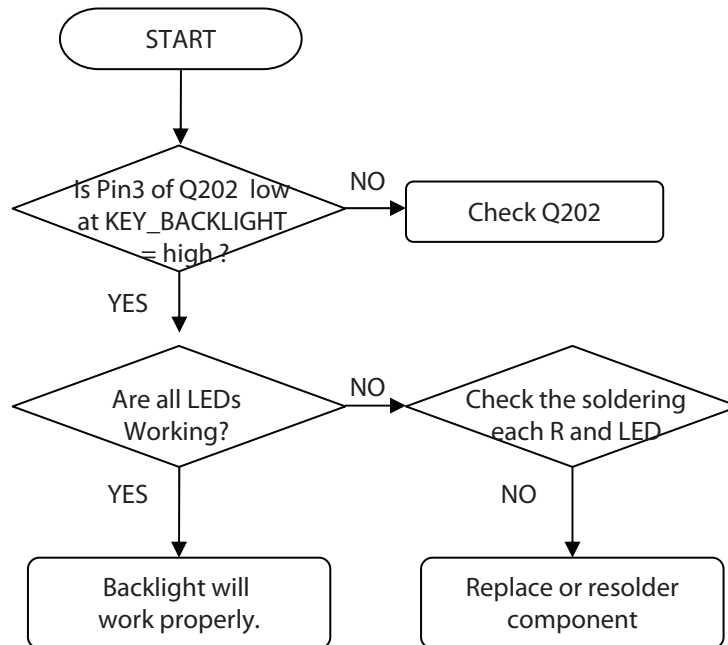


Figure 4.12.1

CIRCUIT



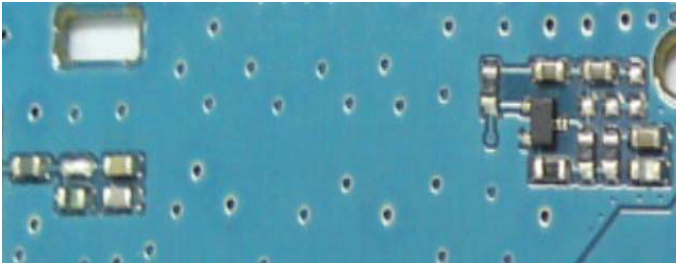
CHECKING FLOW



4. TROUBLE SHOOTING

4.13 FM Radio Trouble

TEST POINT

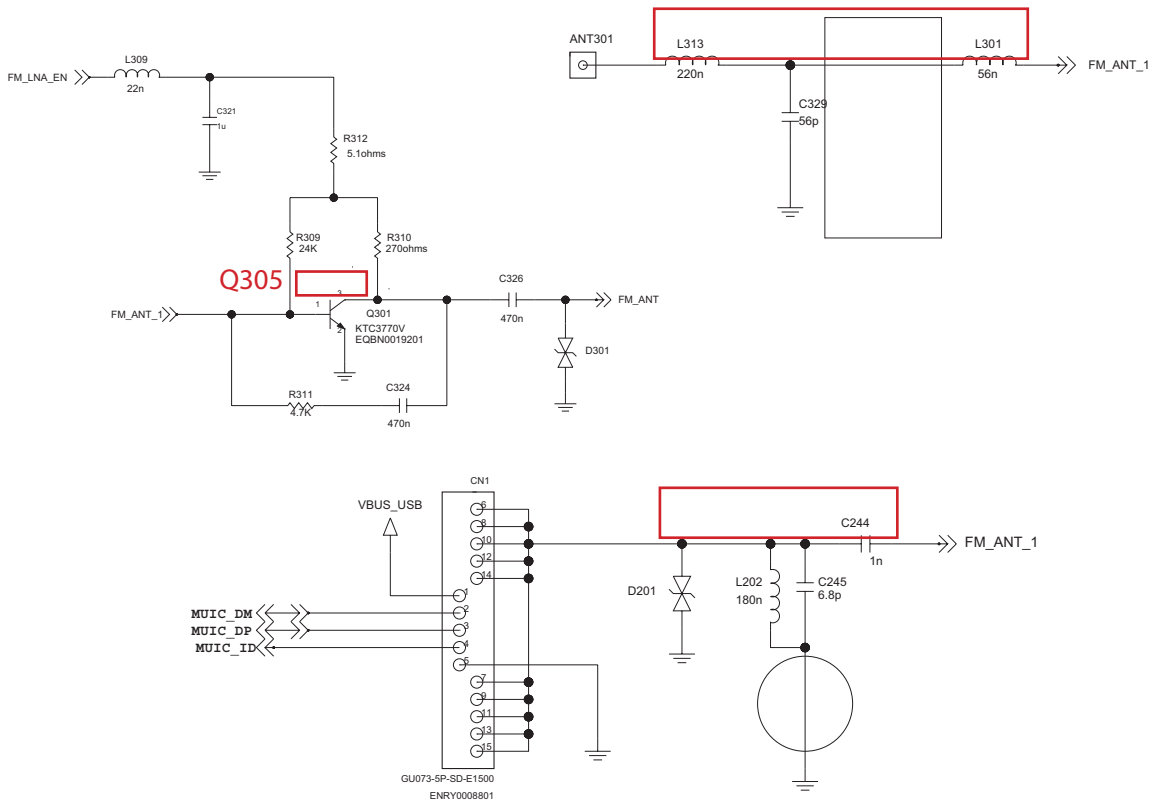


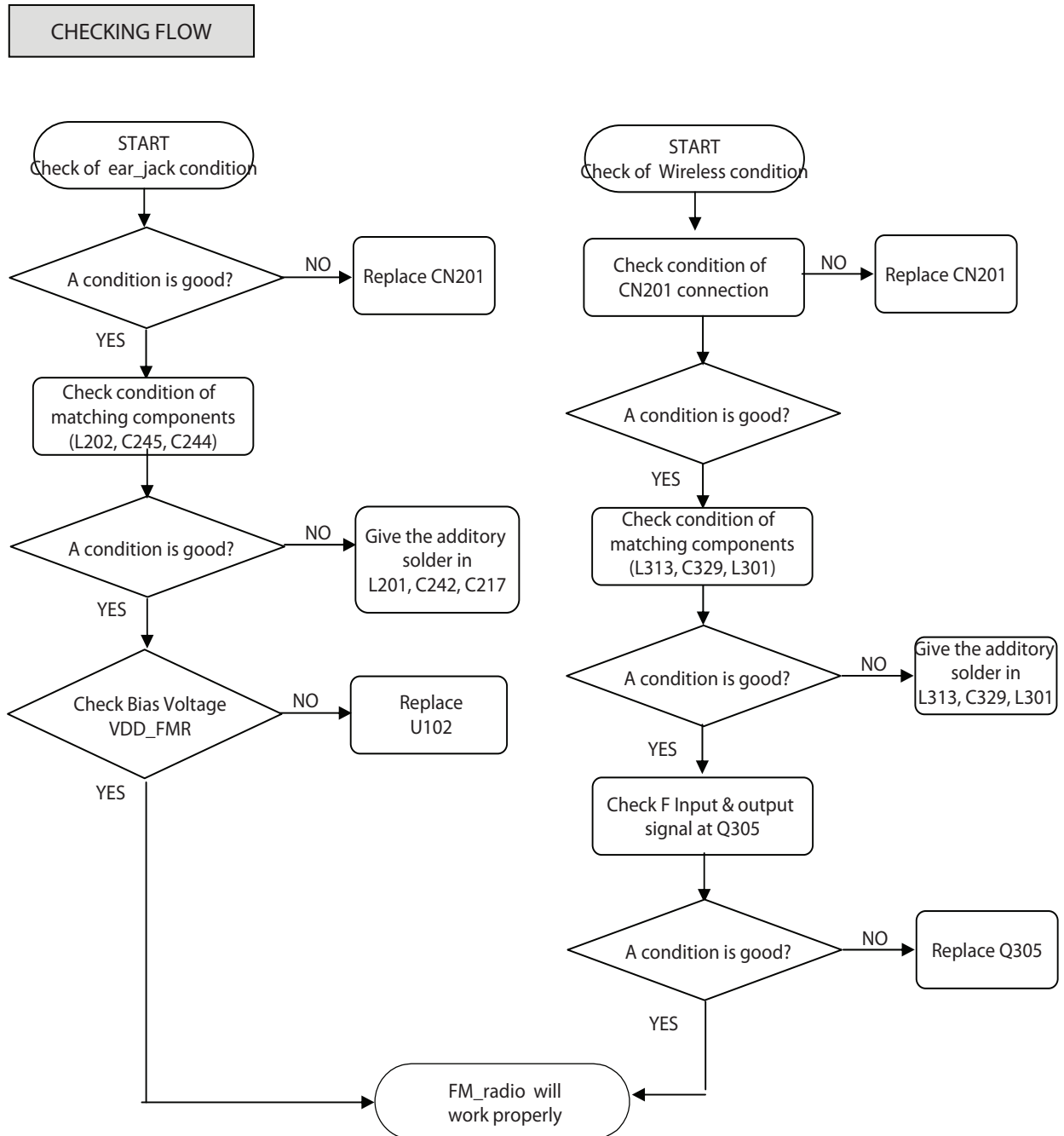
C244
C245
L202

CN201

CIRCUIT

FM Radio(LNA)





5. DOWNLOAD

5. DOWNLOAD

5.1 S/W Download

Preparation

- Target terminal
- PIF-Union
- RS-232 Cable and PIF-UNION to Phone interface Cable
- Power Supply or Battery
- PC supporting RS-232 with Windows 2000 or newer.

If you are going to use battery, the voltage of the battery should be over 3.7V for stable power supplying during S/W download.

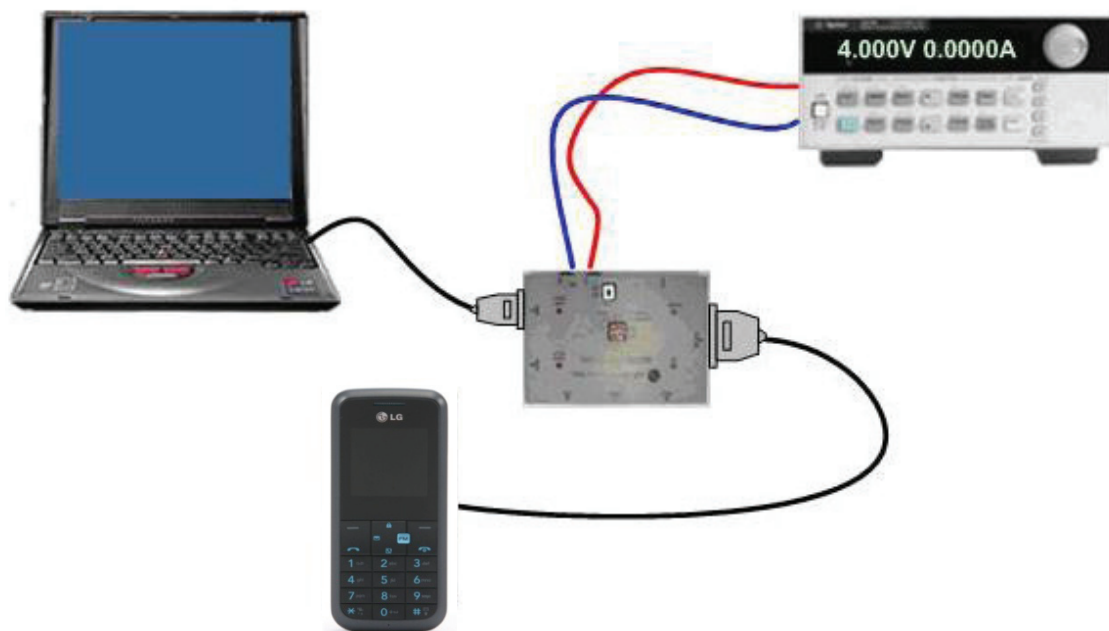
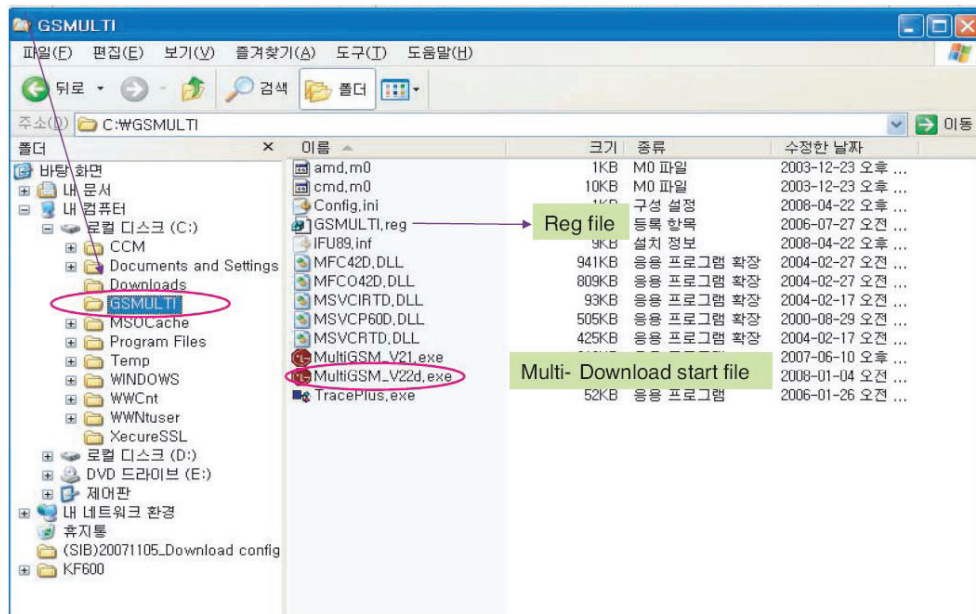


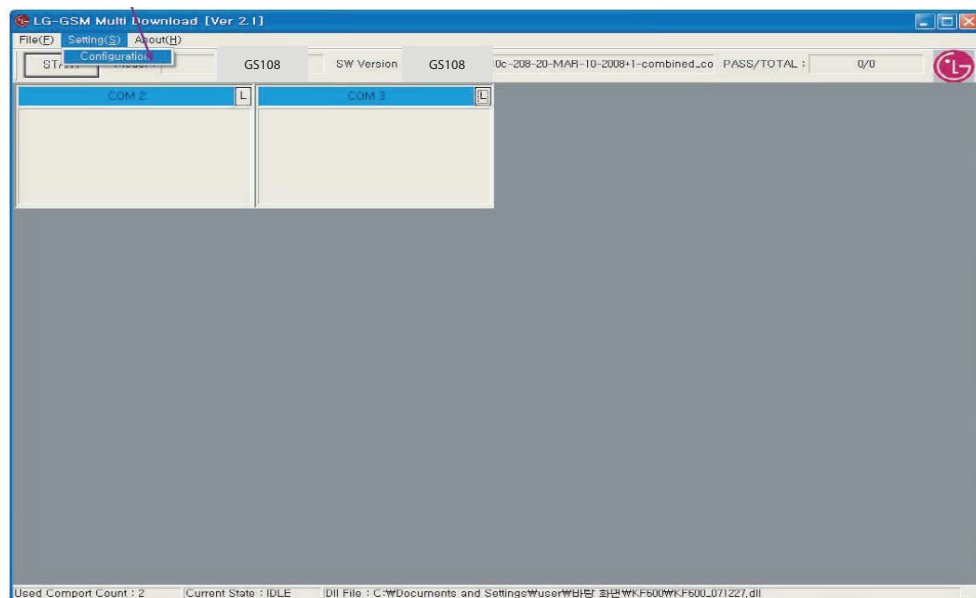
Figure 5.1. S/W download & upgrade setup

5.2 Download program user guide

5.2.1. After "GSMULTI" folder copy, paste C:\



5.2.2. "MultiGSM.exe" execution file execute



5. DOWNLOAD

5.3 Multi-Download Program Setting (Model-Base)

Multi-Download Program Execution ? Setting : Configuration

Model DLL File (C:\GSMULTI\Model)

Phone Software select (mot,m0 file)

TI RAM Loader (Only TI Model , ADI Model : Don't care) (C:\GSMULTI\Model)

Download speed (bps)

Start Com port

End Com port

Frame count select

Internal / External boot select (Only TI Model) (External boot : G7000, G7030)

After setting completed iOK! BTN click

OK

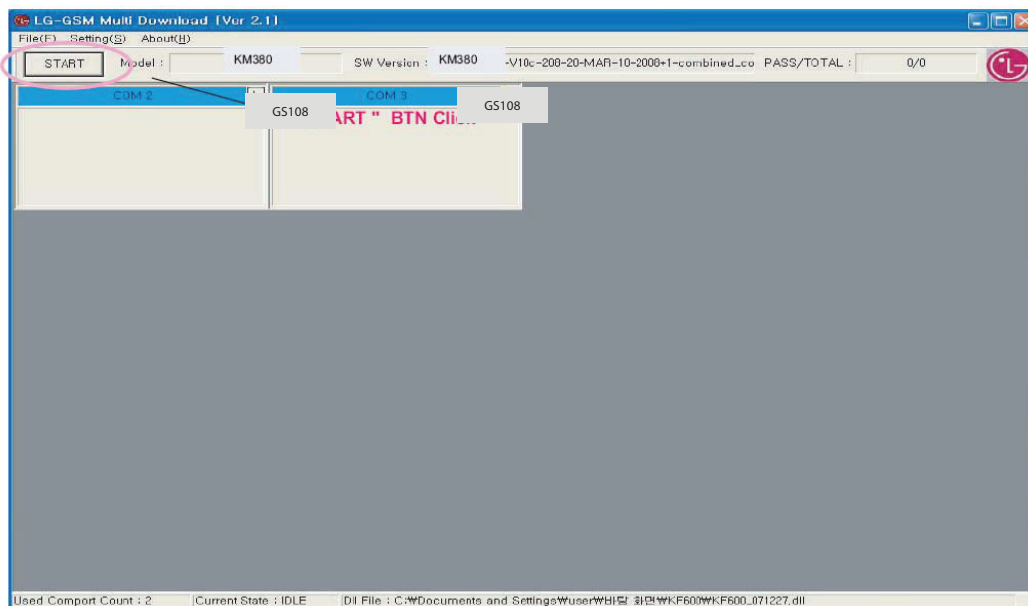
Download speed : TI Model → 115200bps, ADI Model → 460800bps

Start COM:1, End COM:16

Frame:16

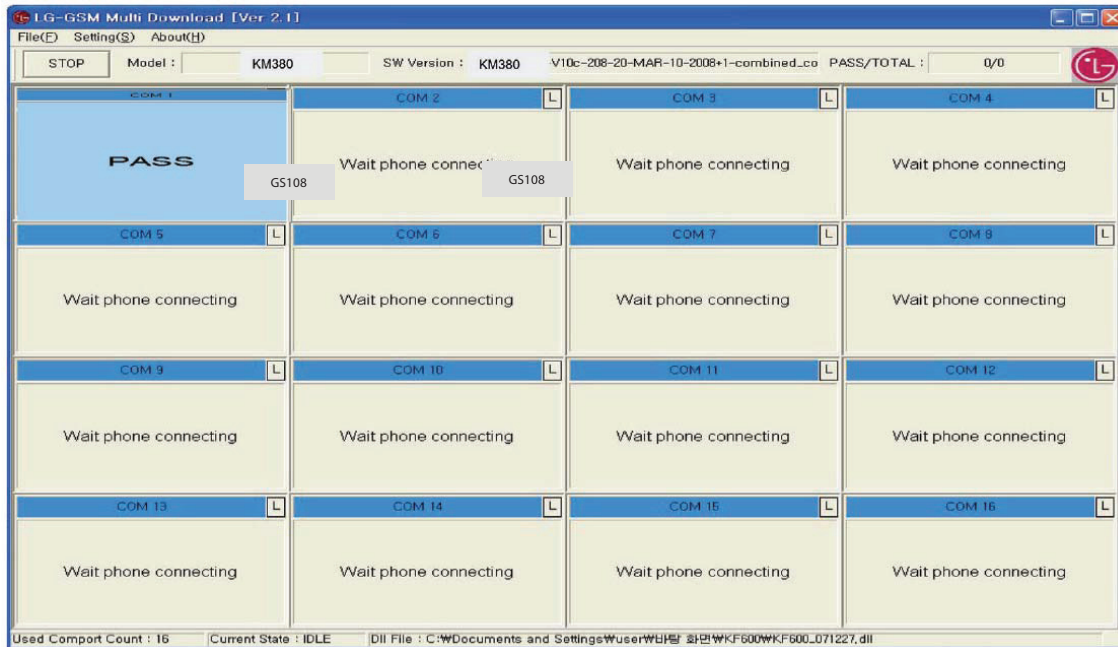
16port Setting Default condition

Setting Completed

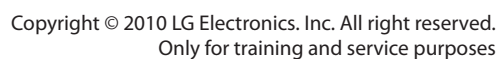


5. DOWNLOAD

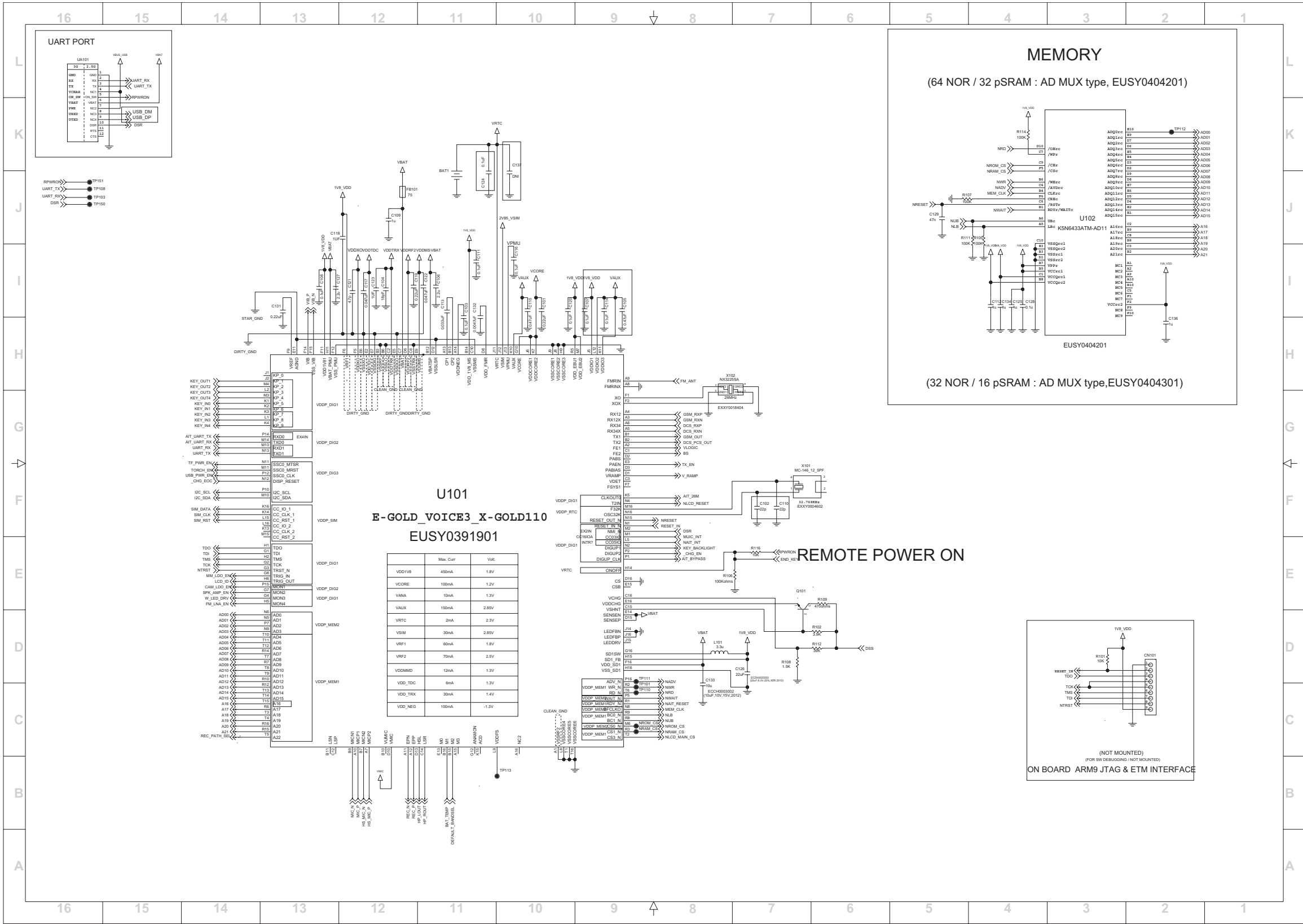
■ Stand-by Condition: "Wait phone connecting" confirm -> Phone connection



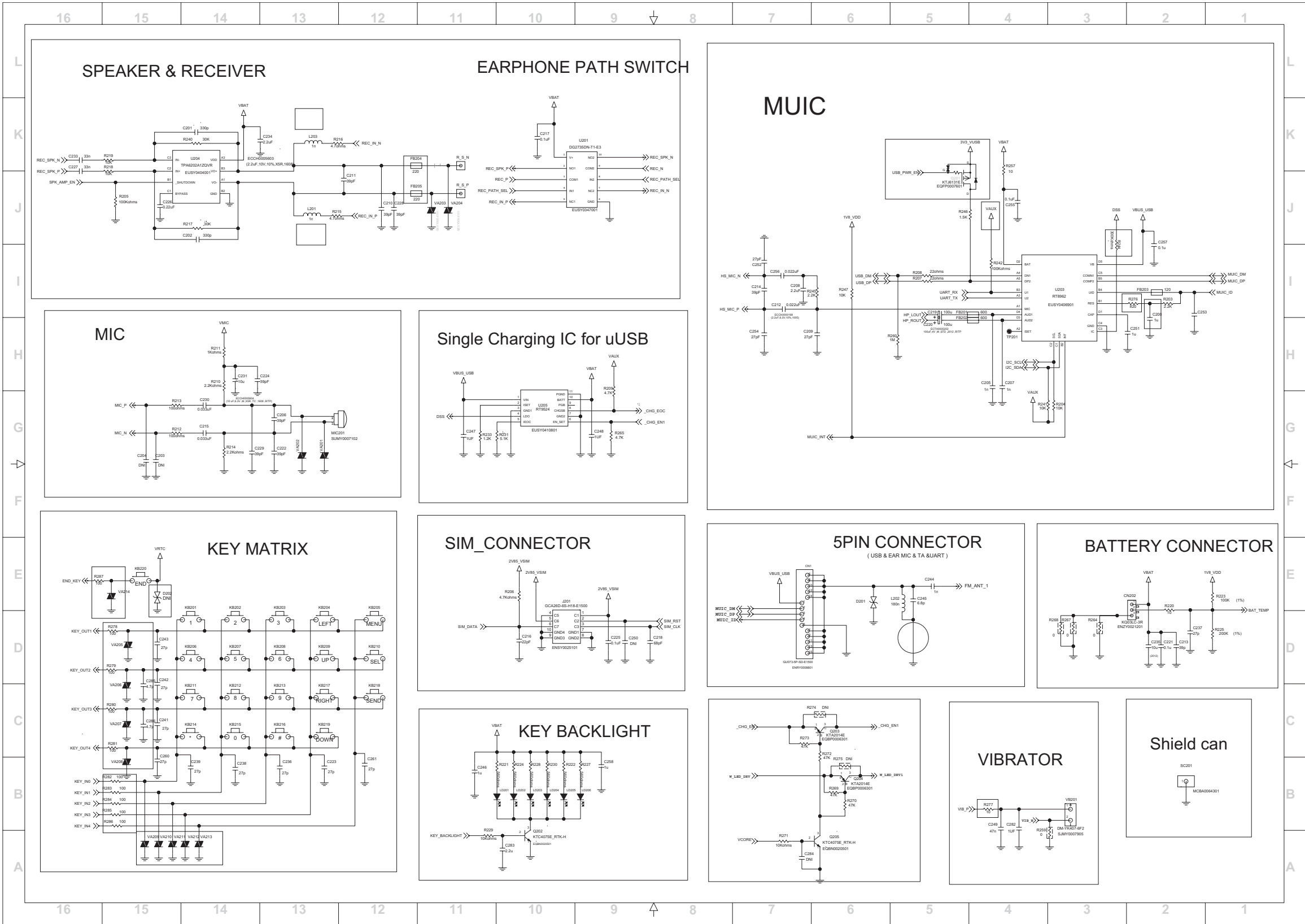
6. BLOCK DIAGRAM



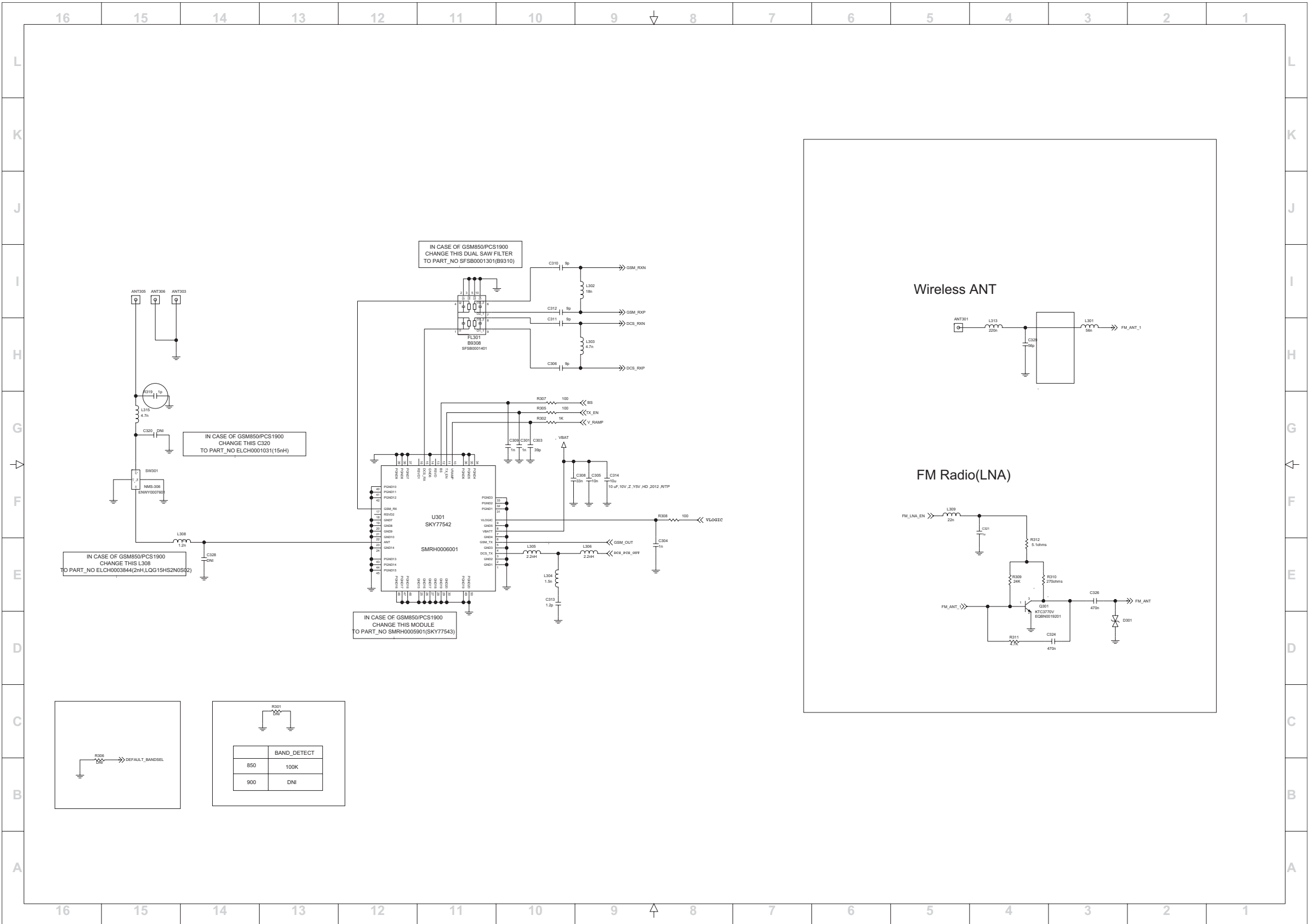
7. CIRCUIT DIAGRAM



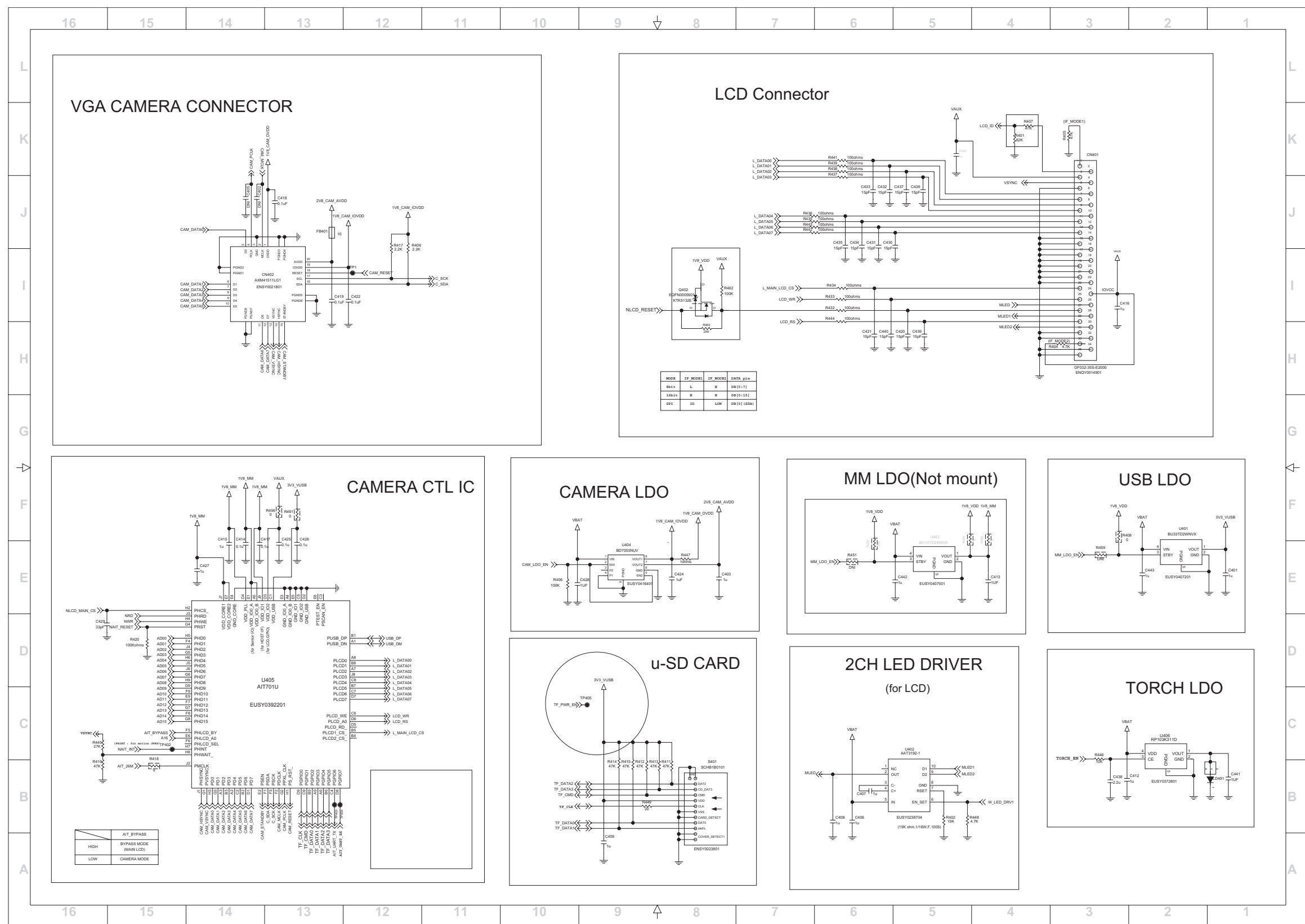
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



8. BGA Pin Map

8.1 BGA PIN MAP (Top View)

8.1.1 BGA IC pin check (U101)

▪ Ball Diagram (Top View), PMB7900(E-GOLDVoice 3)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	VSSRF2	FE1	RX12X	RX12	RX34X	RX34	MICP2	FMRINX	FMRIN	MICP1	EPN	EPP	CP1	VDDNEG	M3	NC2	A
B	TX1	TX2	VSSRF			VSSL	MICN2		MICN1	VUMIC	LSN	VBATSP	CP2	VDD1V8_MS	M2	M1	B
C	FE2	VDDTRX	VDET			VSSRX	VBAT			VSSMS		LSP		HSR	VSHNT	VCHG	C
D	VRAMP	PABS	PABIAS			VDDRFX		VDDFMR		VMIC		VSSLSR	HSL		SENS	CS	D
E		VDDTDC	PAEN		VSSDC	VSSX	VSSDI		VDDMS		AGND		M0	SENS	CSB	VDDCHG	E
F	X0	X0X			VDDX	VRF1	FSYS1		VREF		VDD1V81	VSSPMU		VIB	VSSVIB	VDDSD1	F
G	TBI	TCK	TRSTN	MON3			MON2	TRIGN		VCORE		ANAMON				SD1SW	G
H	TDO	TMS			MON4	TRIGOUT			VSSCORE3		VBATPMU			ONOFF	SD1FB	VSSSD1	H
J	KP_0	KP_1			VDDIO1	VDDCORE1		VSSCORE2	VSSCORE1		VRTC	VSIM	VPMU	LEDFBN	LEDDRV	LEDGBP	J
K	KP_5	KP_6	KP_7	KP_9	CLKUT0		VDDCORE2			VAUX	VDDIO3		CCCLK2	CCCLK1	ACD	CCIO1	K
L	KP_8	KP_3			CC05I			VSSCORE4	VDDFS			VDDIO2			CCRST1	CCIO2	L
M	CC03I	NMI_N	KP_4	KP_2		CS0_N	VDD_EBU2			I2C_SDA	SSC0_MRST		RXD1	TXD0	CCRST2	F32K	M
N	RESE_T_IN_N	DIGUP1		T2IN	AD1	AD0		BFCLKO	AD3		SSC0_MTSR	DISPRESET	TXD1		RESE_T_OUT_N	OSC32K	N
P	DIGUP_CLK	DIGUP2			WAIT_N		AD2			I2C_SCL		SSC0_CLK		RXD0	MON1	ADV_N	P
R	RDY_N	WR_N	CS1_N		VDD_EBU1	A17	AD9	BC1_N	BC0_N	AD12		AD13		AD7	A21	A20	R
T	VSSCORE5	CS3_N	A18	A19	A22	RD_N	AD8	AD10	AD11	AD4	AD5	AD6	AD14	AD15	A16	VSSCORE6	T
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	



Use



Not Use

8. BGA Pin Map

8.1.2 BGA IC pin check (U102)

▪ Ball Diagram (Top View), K5N6433ATM

	1	2	3	4	5	6	7	8	9	10
A	NC	NC			/LBc	/UBc			NC	NC
B	RDYr/ WAITc	A21r	VSSrc	CLKrc	VDDrc	/WErc	VPPr	A19rc	A17rc	NC
C	VDDQrc	A16rc	A20rc	/AVDrc	NC	/RSTr	/WPr	A18rc	/OErc	VSSQrc
D	VSSrc	ADQ7rc	ADQ6rc	ADQ13rc	ADQ12rc	ADQ3rc	ADQ2rc	ADQ9rc	ADQ8rc	/OErc
E	ADQ15rc	ADQ14rc	VSSQrc	ADQ5rc	ADQ4rc	ADQ11rc	ADQ10rc	VDDQrc	ADQ1rc	ADQ0rc
F	NC	VDDrc			/CSrc	CREc			NC	NC

52 FBGA: Top View (Ball Down)

	Use
	Not Use

8. BGA Pin Map

8.1.3 BGA IC pin check (U405)

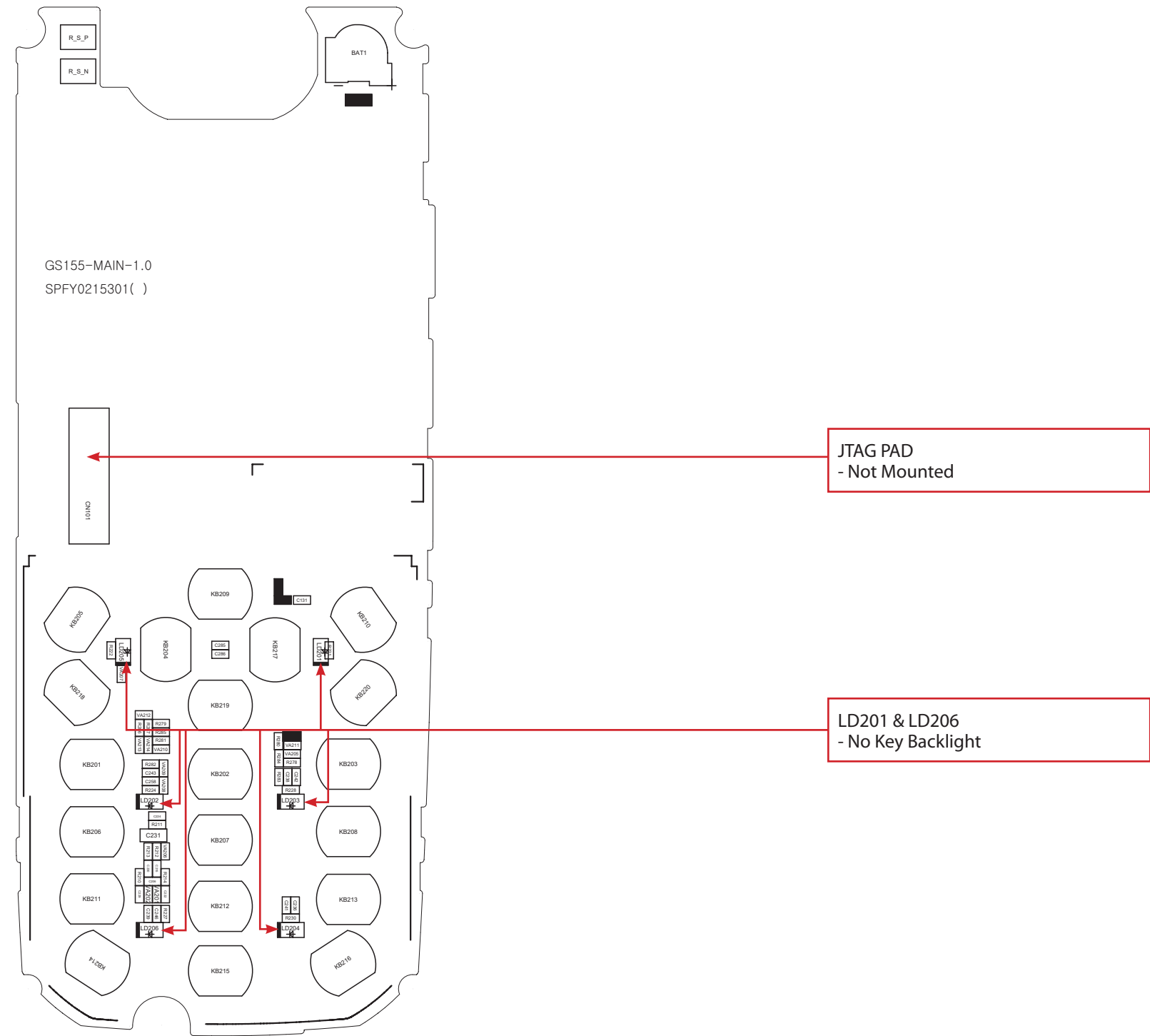
▪ Ball Diagram (Top View), AIT701U

J1	J2	J3	J4	J5	J6	J7	J8	J9
PHSYNC	PMCLK	PHRD_	PHD2	PHD5	PHD6	VDD_CORE	PLCD3	VDD_IO1
H1	H2	H3	H4	H5	H6	H7	H8	H9
PS_RST_	PHCS_	PD0	PHWE_	PHD0	PHD4	PHINT	PHWAIT_	PHD8
G1	G2	G3	G4	G5	G6	G7	G8	G9
PVSYNC	PPXL_CLK	PD1	PRST_	PHD3	PHD7	PHD13	PHD15	PHD9
F1	F2	F3	F4	F5	F6	F7	F8	F9
PSDA	PDCLK	PSCK	PHD1	PHLCD_BY	PHLCD_SEL	PHD12	PHD14	PHD10
E1	E2	E3	E4	E5	E6	E7	E8	E9
VDD_IO0	PSEN	GND_IO0	GND_CORE	GND_IO1	PHLCD_A0	VDD_CORE	PTEST_EN	PHD11
D1	D2	D3	D4	D5	D6	D7	D8	D9
PD7	GND_USB	VDD_IO2	VDD_PLL	PLCD_RD_	PLCD_A0	PLCD7	PGPIO7	PGPIO0
C1	C2	C3	C4	C5	C6	C7	C8	C9
VDD_US3	PD5	PSCAN_EN	PGPIO6	GND_IO2	PLCD_WE_	PLCD6	PLCD4	PGPIO1
B1	B2	B3	B4	B5	B6	B7	B8	B9
PUSB_DP	PD6	PC3	PLCD2_CS_	PLCD1_CS_	PGPIO5	PLCD5	PLCD1	PGPIO2
A1	A2	A3	A4	A5	A6	A7	A8	A9
PUSB_DN	PD4	PD2	GND_IOC	VDD_IO0	PGPIO4	PLCD2	PLCD0	PGPIO3

☐ Use
☒ Not Use

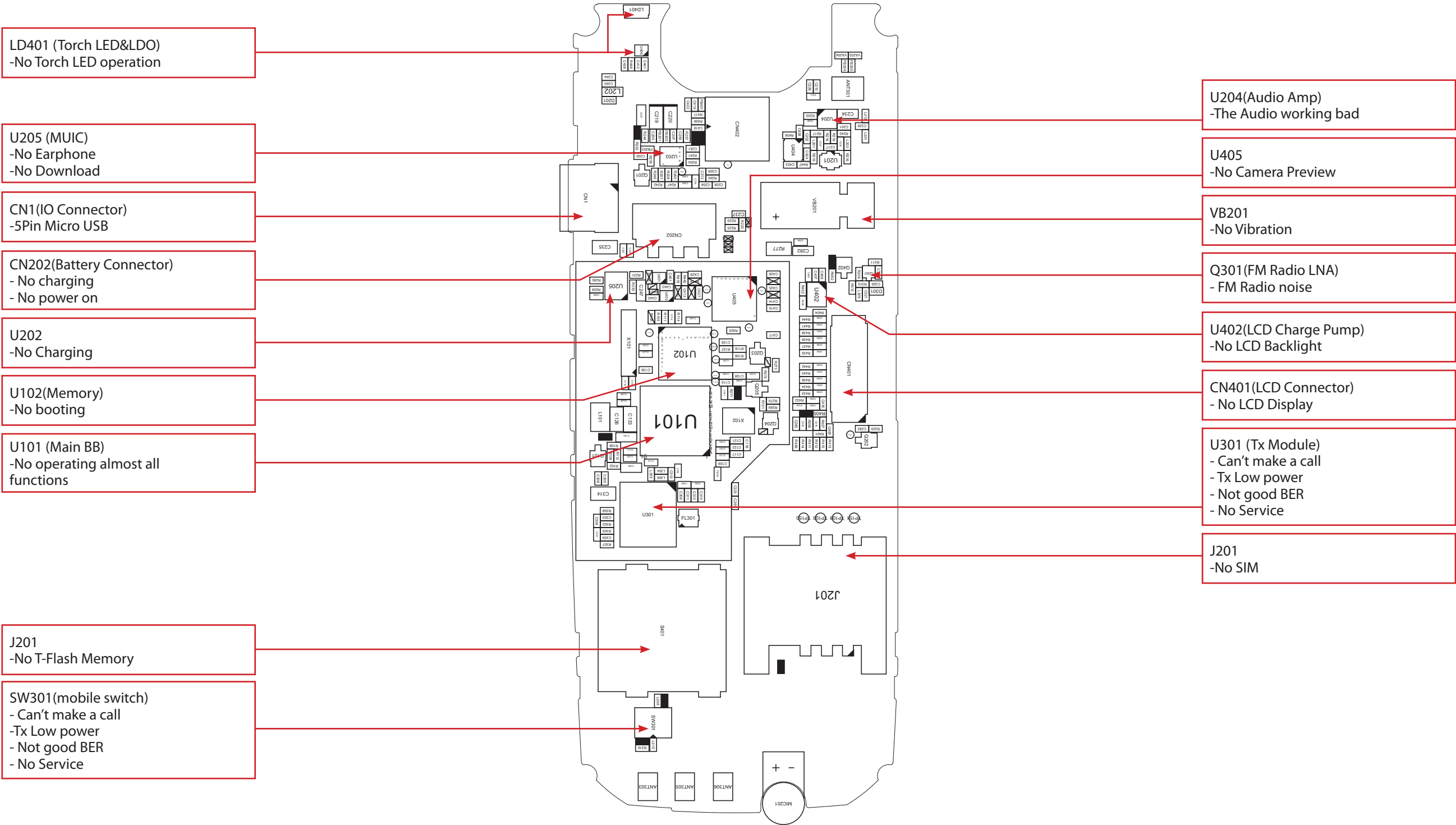


9. PCB LAYOUT



GS155_MAIN_SPFY0215301-1.0_TOP

9. PCB LAYOUT



GS155_MAIN_SPFY0215301-1.0_BOT

10.ENGINEERING MODE

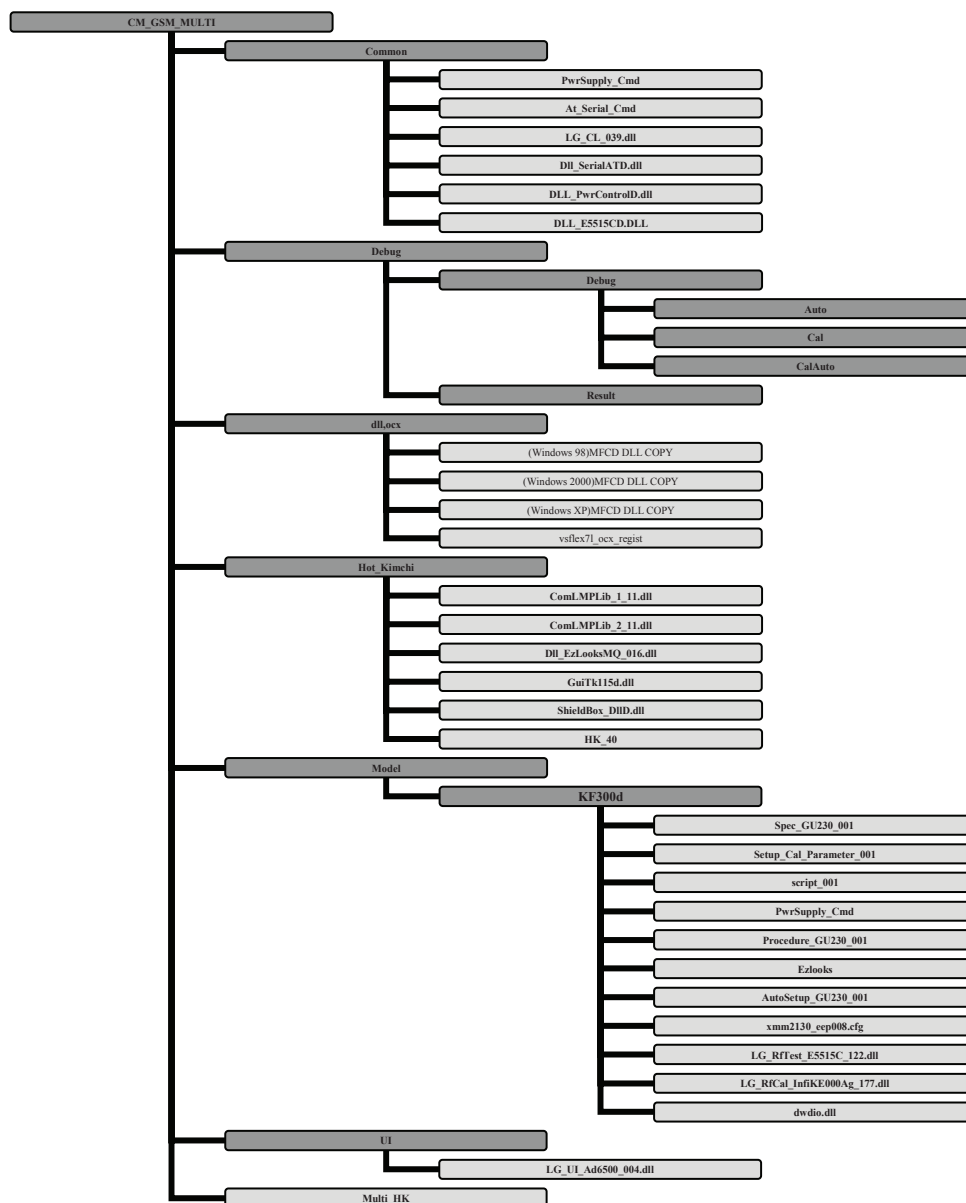
Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is "1809#*155#"Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back key will switch back to the original test menu.

11. AUTO CALIBRATION

11.1 Overview

Auto-cal (Auto Calibration) is the PC side Calibration tool that perform Tx, Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply). Auto-cal generates calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

11.2 Configuration of HotKimchi



11.3 Description of Basic File

11.3.1. Common

- **LG_CL_039.dll** : Common logic dll, Module In Charge of Reading PID & S/W Version, Booting.
- **Dll_SerialATD.dll** : Serial Communication Module From Phone by AT Command.
- **DLL_PwrControlD.dll** : Communication Module From Power supply.
- **DLL_E5515CD.DLL** : Communication Module From Agilent 8960(Test Set).
- **At_Serial_Cmd.xml** : Definition File of AT Command.
- **PwrSupply_Cmd.xml** : Definition File of Power supply command.

11.3.2. Debug

- **Debug** - Cal : Result File of Calibration.
Auto : Result File of Auto Test.
CalAuto : Result File of Cal & Auto Test.

11.3.3. dll, ocx

- **vsflex7l_ocx_regist** : Registration File for System use
- **Windows XXX)MFCD DLL** : Registration File for System use

11.3.4. HotKimchi

- **HK_40.exe** : Execute File, HK_XX → XX is File Version.
- **ComLMPLib_1_11.dll** : Communication Module With PLC or Shield Box In Automation Rack.
Support to J&S Shield Box and Tescom TC-5981A.
- **ComLMPLib_2_11.dll** : Communication Module With PLC or Shield Box In Automation Rack.
Support to J&S Shield Box and Tescom TC-5981A.
- **Dll_EzLooksMQ_005.dll** : Communication Module with ezTray Installed In Local PC.
- **GuiTk115d.dll** : control library
- **ShieldBox_DIID.dll** : Communication with Shield Box. Support to Tescom TC-5952B.

11.3.5. Model

- **LG_RfCal_InfiKE000Ag_177.dll** : Main Module of Calibration
- **LG_RfTest_E5515C_122.dll** : Main Module of Auto Test
- **Xmm2130_eep008.cfg** : Cal Data Save binary Module.
- **AutoSetup_GU230_100.xml** : RF TEST Setup Module.
- **Ezlooks.xml** : Calibration ezLooks Item & Cal Spec Definition Module.
- **Procedure_GU230_001.xml** : RF TEST Procedure Definition Module.
- **Script_001.xml** : RF TEST Setup 및 calibration Setup Module.
- **Spec_GU230_001.xml** : Definition Module of Auto Test Spec
- **Setup_Cal_Parameter_001.xml** : Calibration Definition Module.

11. AUTO CALIBRATION

11.3.6. UI

-. **LG_UI_Ad6500_002.dll** : ADI Model UI DLL.

11.3.7. Multi_HK

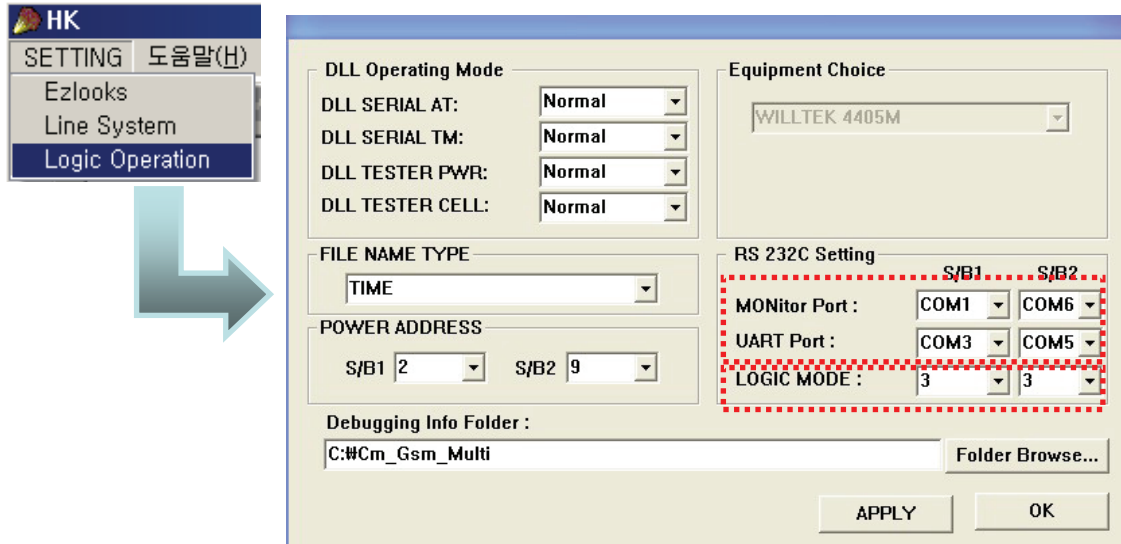
-. Registration File For System Setting.

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3rd, 4th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1st ON state

11.4 Procedure

1. Copy the file to C:\Cm_Gsm_Multi
2. Copy the files of((Windows XXX)MFCD DLL, vsflex7l_ocx_regist to C:\Cm_Gsm_Multi\dll,ocx
3. Select MFCD DLL of your computer OS
4. Click on "vsflex7l_ocx_regist"
5. Click on "Multi_HK reg"
6. Connect as Fig 11-2 (RS232 serial cable is connected between COM port of PC, in general.
7. . Run HK_40exe to start calibration.
8. Click " Logic Operation" of "SETTING" menu bar

11. AUTO CALIBRATION



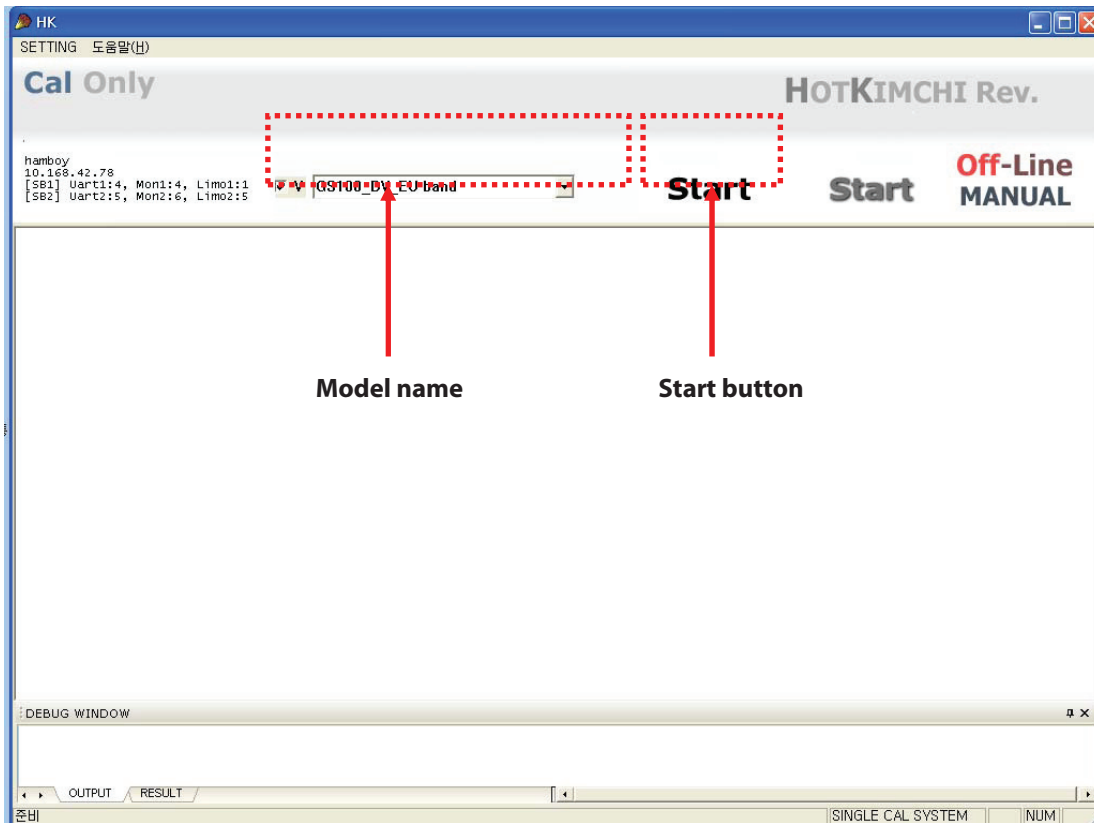
9. Set PORT (using RS232 cable) that PC can communicate with the phone

10. Select " LOGIC MODE" that you want

Logic mode: 1-> Calibration only
2-> Auto test only
3-> Cal & Auto

11. AUTO CALIBRATION

11. Select the model name "GS108"



12. Click "start" button

11.5 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

11.6 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

11.7 ADC

This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table will be reset.

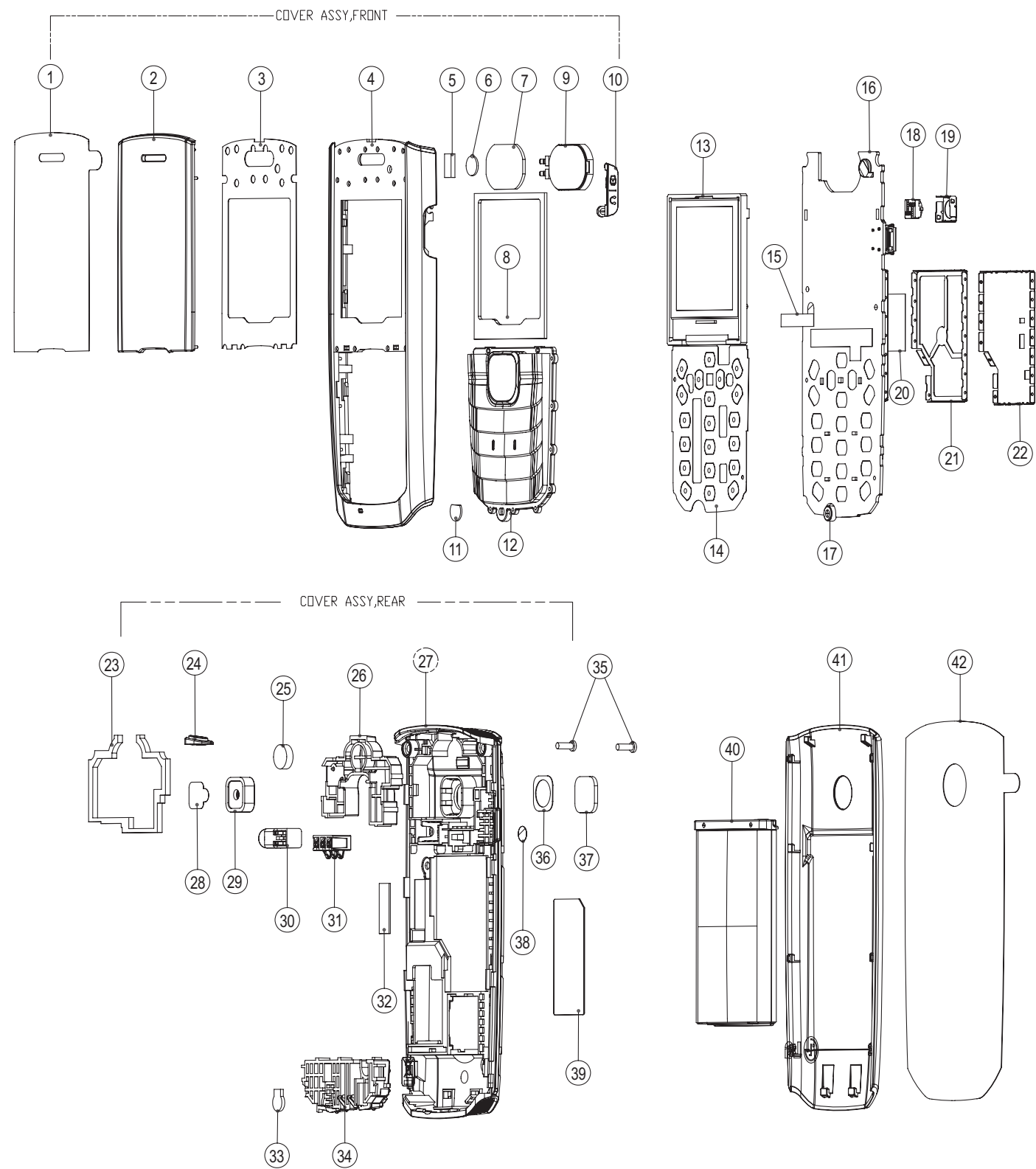
11.8 Target Power

BAND	Description	Low	Middle	High
GSM 850	Channel	128	191	251
	Frequency	824.2 MHz	836.8 MHz	848.8 MHz
	Max power	32.5 dBm	32.5 dBm	32.5 dBm
EGSM 900	Channel	975	37	124
	Frequency	880.2 MHz	897.4 MHz	914.8 MHz
	Max power	32.5 dBm	32.5 dBm	32.5 dBm
DCS1800	Channel	512	699	885
	Frequency	1710.2 MHz	1747.6 MHz	1784.8 MHz
	Max power	29.5 dBm	29.5 dBm	29.5 dBm
PCS 1900	Channel	512	661	810
	Frequency	1850.2 MHz	1880 MHz	1909.8 MHz
	Max power	29.5 dBm	29.5 dBm	29.5 dBm



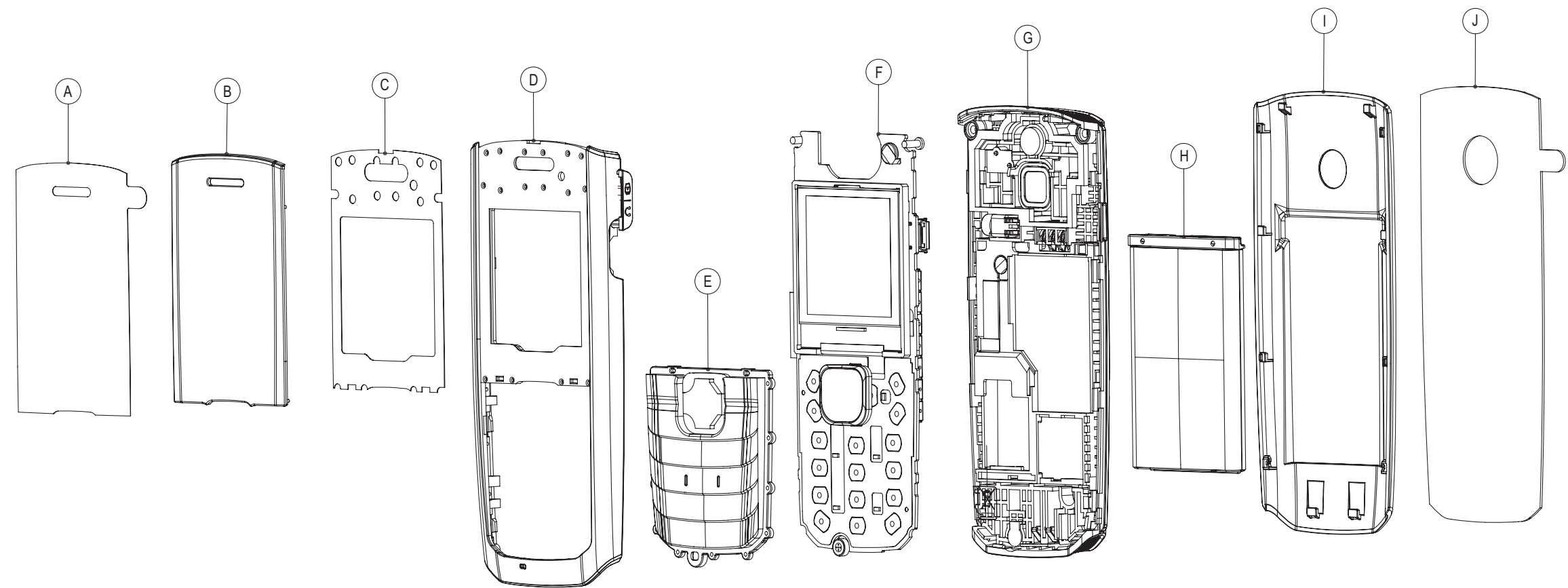
12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



42	TAPE, PROTETION, COVER_BATTERY	MTAB040370I	I	
41	COVER_BATTERY	MCJA010330I	I	
40	BATTERY	SBPL009050I	I	
39	LABEL, APPROVAL	MLAA0062303	I	
38	LABEL A/S	MLAB0001102	I	
37	WINDOW CAMERA	MWAE006130I	I	
36	TAPE CAMERA	MTAK003360I	I	
35	SCREW TAPPING, BIND	GGZZ000510I	2	
34	INTENNA	SNGF005980I	I	
33	PAD [MIKE]	MPBZ025790I	I	
32	PAD CONNECTOR [LCD]	MPBU009030I	I	
31	BATTERY CONTACT	ENZY002120I	I	
30	MOTOR	SJMY0007905	I	
29	CAP CAMERA	MCCZ003530I	I	
28	TAPE PROTECTION[CAP CAMERA]	MTAB037160I	I	
27	COVER, REAR	MCJN011410I	I	
26	FM INTENNA	SNGF005990I	I	
25	PAD SPEAKER	MPBN008250I	I	
24	LENS FLASH	MLCE001470I	I	
23	PAD SPEAKER [REAR]	MPBN008260I	I	
22	CAN SHIELD_COVER	MCBA006440I	I	
21	CAN SHIELD_FRAME	MCBA006430I	I	
20	LCD INSULATOR	MIDZ024860I	I	
19	CAMERA SOCKET	ENSY002180I	I	
18	CAMERA MODULE	SVCY002270I	I	
17	MICROPHONE ASSY	SUMY0003815	I	
16	PCB ASSY MAIN	SAFY036500I	I	
15	TAPE [LCD]	MTAZ027260I	I	
14	DOME ASSY METAL	ADCA010700I	I	
13	LCD MODULE	SVLM003340I	I	
12	KEYPAD ASSY, MAIN	AKAC000610I	I	
11	FILTER [MIKE]	MFBZ000820I	I	
10	CAP [USB]	MCCZ004000I	I	
9	SPEAKER	SUSY0028904	I	
8	PAD, LCD	MPBG010350I	I	
7	FILTER [SPEAKER]	MFBZ000810I	I	
6	PAD, [BACK UP BATTERY]	MPBZ028870I	I	
5	PAD, CONTACT	MPBZ026720I	I	
4	COVER, FRONT	MCJK011970I	2	
3	TAPE, WINDOW	MTAD011900I	I	
2	WINDOW, LCD	MWAC013360I	I	
1	TAPE, PROTECTION (WINDOW)	MTAB036270I	I	
No	Part Name	Part Number	Q'ty	Remark

ASS'Y EXPLODED VIEW



J	TAPE,PROTECTION (COVER BATTERY)	MTAB0403701	1	
I	COVER,BATTERY	MCJA0103301	1	
H	BATTERY PACK	SBPL0090501	1	
G	COVER ASSY,REAR	ACGM0159701	1	
F	PCB ASSY, MAIN	SAFY0365001	1	
E	KEYPAD ASSY,MAIN	AKAC0006101	1	
D	COVER ASSY,FRONT	ACGK0150501	1	
C	TAPE, WINDOW	MTAD0119001	1	
B	WINDOW,LCD	MWAC0133601	1	
A	TAPE,PROTECTION (WINDOW)	MTAB0362701	1	
No	Part Name	Part Number	Q'ty	Remark

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
2	APEY	PHONE	APEY0895502		BLACKRED	
3	ACGK	COVER ASSY,FRONT	ACGK0150501		BLACK	D
4	MCCZ00	CAP	MCCZ0040001	MOLD, Urethane Rubber S195A, , , , ,	BLACK	10
4	MCJK00	COVER,FRONT	MCJK0119701	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	4
4	MFBZ00	FILTER	MFBZ0008201	COMPLEX, (empty), 0.15, , , , ,	WITHOUT COLOR	11
4	MFBZ01	FILTER	MFBZ0008101	COMPLEX, (empty), 0.15, , , , ,	WITHOUT COLOR	7
4	MPBG00	PAD,LCD	MPBG0103501	COMPLEX, (empty), , , , , ,	WITHOUT COLOR	8
4	MPBZ00	PAD	MPBZ0267201	CUTTING, NS, , , , , ,	WITHOUT COLOR	5
4	MPBZ01	PAD	MPBZ0288701	COMPLEX, (empty), , , , , ,	BLACK	6
4	MTAB00	TAPE,PROTECTION	MTAB0362701	COMPLEX, (empty), 0.15, , , , ,	WITHOUT COLOR	A, 1
4	MTAD00	TAPE,WINDOW	MTAD0119001	COMPLEX, (empty), 0.15, , , , ,	WITHOUT COLOR	C, 3
4	MWAC00	WINDOW,LCD	MWAC0133601	MOLD, Tempered Glass, , , , , ,	BLACK	B, 2
3	ACGM00	COVER ASSY,REAR	ACGM0159701		RED	G
4	MCCZ00	CAP	MCCZ0035301	COMPLEX, (empty), , , , , ,	BLACK	29
4	MCJN00	COVER,REAR	MCJN0114101	COMPLEX, (empty), , , , , ,	BLACK	27
4	MLAB	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	WHITE	38
4	MLCE00	LENS,FLASH	MLCE0014701	COMPLEX, (empty), , , , , ,	BLACK	24
4	MPBN00	PAD,SPEAKER	MPBN0082501	COMPLEX, (empty), 1, , , , ,	WITHOUT COLOR	25
4	MPBN01	PAD,SPEAKER	MPBN0082601	COMPLEX, (empty), 1.5, , , , ,	WITHOUT COLOR	23
4	MPBU00	PAD,CONNECTOR	MPBU0090301	COMPLEX, (empty), 2, , , , ,	WITHOUT COLOR	32
4	MPBZ00	PAD	MPBZ0257901	COMPLEX, (empty), , , , , ,	BLACK	33
4	MTAB00	TAPE,PROTECTION	MTAB0371601	CUTTING, NS, , , , , ,	WITHOUT COLOR	28
4	MTAK00	TAPE,CAMERA	MTAK0033601	COMPLEX, (empty), 0.8, , , , ,	WITHOUT COLOR	36
4	MWAE00	WINDOW,CAMERA	MWAE0061301	CUTTING, PMMA MR 200, , , , , ,	BLACK	37

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	AKAC00	KEYPAD ASSY,MAIN	AKAC0006101		BLACK	E, 12
3	GGZZ00	SCREW TAPPING	GGZZ0005101	1.6 mm,4.5 mm,MSWR3(BK) ,N ,+ ,-, ,,, ,BH ,+ ,2 ,1.6 ,4.5 ,SWCH ,FZB	WITHOUT COLOR	35
5	ADCA00	DOME ASSY,METAL	ADCA0107001		WITHOUT COLOR	14
5	MCBA00	CAN,SHIELD	MCBA0064401	PRESS, STS, 0.2, ,,, ,	WITHOUT COLOR	22
5	MIDZ00	INSULATOR	MIDZ0248601	CUTTING, NS, ,,, ,	WITHOUT COLOR	20
5	MIDZ01	INSULATOR	MIDZ0252101	COMPLEX, (empty), ,,, ,	WITHOUT COLOR	
5	MTAZ00	TAPE	MTAZ0272601	COMPLEX, (empty), ,,, ,	WITHOUT COLOR	15
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	WITHOUT COLOR	
6	SC201	CAN,SHIELD	MCBA0064301	PRESS, STS, 0.2, ,,, ,	WITHOUT COLOR	21

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.2 Replacement Parts

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM,BAR/FILP	TGSM0078202		BLACKRED	
4	ENZY00	CONNECTOR,ETC	ENZY0021201	3 PIN,0.25 mm,ANGLE , ,		31
4	SJMY00	VIBRATOR,MOTOR	SJMY0007905	3 V,0.08 A,5.8*5.1*9 ,cylinder motor ; ,3V , , ,11000 , , ,29		30
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0059801	3.0 ,-5.0 dBd,, ,internal, GSM900/1800 ; ,DUAL ,-5.0 ,50 ,3.0		34
4	SNGF01	ANTENNA,GSM,FIXED	SNGF0059901	3.0 ,-5.0 dBd,, ,internal, FM radio, Carrier_FPCB type ; ,SINGLE ,-5.0 ,50 ,3.0		26
3	SAFY	PCB ASSY,MAIN	SAFY0365001			F, 16
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0113001			
5	ENSY00	CONN,SOCKET	ENSY0021802	20 ,ETC ,cover ,.6 mm,		
5	SUMY00	MICROPHONE	SUMY0003815	FPCB ,-44 dB,4*1.0 ,TDMA Noise improvement ; , , ,[empty] ,[empty] , ,FPC		17
5	SVCY00	CAMERA	SVCY0022701	CMOS ,VGA ,hynix 1/10", socket type, 5x5x2.5t		18
5	SVLM00	LCD MODULE	SVLM0033401	Main ,1.52 ,128*128 ,35.78*39.7*1.9 ,262K ,TFT ,TM ,LGDP4515 ,		13
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0270401			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0143401			
6	C101	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C103	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C105	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C108	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C111	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C114	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C115	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C116	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C120	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C121	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C124	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0025502	22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP , , ,0.85t ,[empty] [empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C127	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , ,[empty] ,[empty] [empty] ,[empty] ,[empty] ,[empty] ,1.25 mm		
6	C134	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C200	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C214	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C217	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V,K,X7R,HD,1005,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V,J,NP0,TC,1005,R/TP		
6	C219	CAP,TANTAL,CHIP	ECTH0005202	100 uF,4V,M,L_ESR,2012,R/TP,,,[empty],[empty],[empty] ,[empty],[empty],[empty],[empty]		
6	C220	CAP,TANTAL,CHIP	ECTH0005202	100 uF,4V,M,L_ESR,2012,R/TP,,,[empty],[empty],[empty] ,[empty],[empty],[empty],[empty]		
6	C221	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V,K,X7R,HD,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C225	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V,K,X7R,HD,1005,R/TP		
6	C226	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V,K,X5R,TC,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C233	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V,K,X5R,TC,1608,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V,Z,Y5V,HD,2012,R/TP,,,[empty],[empty] ,[empty],[empty],[empty],[empty],1.25 mm		
6	C237	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C244	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C247	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V,K,X5R,HD,1608,R/TP		
6	C248	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V,K,X5R,TC,1005,R/TP		
6	C249	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V,K,B,HD,1005,R/TP		
6	C252	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C254	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C255	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V,K,X7R,HD,1005,R/TP		
6	C256	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V,K,X5R,HD,1005,R/TP		
6	C257	CAP,CHIP,MAKER	ECZH0003504	100 nF,25V,K,X7R,HD,1608,R/TP		
6	C260	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C261	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C282	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V,K,X5R,HD,1608,R/TP		
6	C283	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V,M,X5R,TC,1005,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C303	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,,NP0,TC,1005,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C306	CAP,CHIP,MAKER	ECZH0000810	9 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C310	CAP,CHIP,MAKER	ECZH0000810	9 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C311	CAP,CHIP,MAKER	ECZH0000810	9 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C312	CAP,CHIP,MAKER	ECZH0000810	9 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C321	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C324	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C326	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,,NP0,TC,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C406	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C407	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C408	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C409	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C412	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C414	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C415	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C417	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C418	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C419	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,,NP0,TC,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,,NP0,TC,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C422	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C425	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C426	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C428	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C429	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C430	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C431	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C432	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C433	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C434	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C435	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C436	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C437	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C438	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C439	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C440	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C441	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C442	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C443	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN1	CONNECTOR,I/O	ENRY0008801	5 , mm,ANGLE , , , , , 0.64MM ,ANGLE ,[empty] ,DIP ,[empty] ,		
6	CN401	CONNECTOR,FFC/FPC	ENQY0014901	35 ,0.3 mm,ETC , , , , , 0.30MM ,FPC ,STRAIGHT ,BOTH ,SMD ,R/TP ,[empty] ,		
6	CN402	CONN,SOCKET	ENSY0021801	20 ,ETC ,socket ,6 mm,		19
6	D201	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D301	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	FB101	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB201	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB202	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB203	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FB204	FILTER,BEAD,CHIP	SFBH0009601	220 ohm,1005 ,DCR : 0.35 , Rated current : 500mA,PBFREE		
6	FB205	FILTER,BEAD,CHIP	SFBH0009601	220 ohm,1005 ,DCR : 0.35 , Rated current : 500mA,PBFREE		
6	FB401	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL301	FILTER,SAW,DUAL	SFSB0001401	942.5 MHz,35 MHz,2.1 dB,20 dB,1842.5 MHz,75 MHz,2.3 dB,12 dB,2.0*1.6*0.68 ,SMD ,925M~960M,1805M~1880M,10p,B,150_82,150_15,EGSM+DC S Rx , , 942.5, 1842.5 ,2.0*1.6*0.68 ,SMD ,R/TP		
6	J201	CONN,SOCKET	ENSY0025101	6 ,ETC , ,2.54 mm,6pin, 1.8t, Bridge Type, Stopper		
6	L101	INDUCTOR,SMD,POWER	ELCP0008003	3.3 uH,M ,2.5*2.0*1.0 ,R/TP ,Chip power		
6	L201	INDUCTOR,CHIP	ELCH0001403	1 nH,S ,1005 ,R/TP ,PBFREE		
6	L202	INDUCTOR,CHIP	ELCH0001512	180 nH,J ,1608 ,R/TP ,PBFREE		
6	L203	INDUCTOR,CHIP	ELCH0001403	1 nH,S ,1005 ,R/TP ,PBFREE		
6	L301	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
6	L302	INDUCTOR,CHIP	ELCH0001052	18 nH,J ,1005 ,R/TP ,PBFREE		
6	L303	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,		
6	L304	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	L305	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L306	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L308	INDUCTOR,CHIP	ELCH0004720	1.2 nH,S ,1005 ,R/TP ,		
6	L309	INDUCTOR,CHIP	ELCH0005004	22 nH,J ,1005 ,R/TP ,		
6	L313	INDUCTOR,CHIP	ELCH0003848	220 nH,J ,1005 ,R/TP ,chip inductor		
6	L315	INDUCTOR,CHIP	ELCH0001035	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	LD401	DIODE,LED,CHIP	EDLH0015202	white ,ETC ,R/TP ,2.8x0.88x0.6t , , [empty] ,2.8~3.3V ,30mA ,1000~1720mcd , , 110mW , [empty] ,R/TP ,2P		
6	Q101	TR,BJT,NPN	EQBN0020501	ESM ,0.15 W,R/TP , , ,NPN ,5V ,60V ,50V ,150mA ,0.1uA MAX ,10 MIN 700 MAX ,100mW ,ESM ,R/TP ,3P		
6	Q201	TR,FET,P-CHANNEL	EQFP0007601	ESM (EMT3) ,0.1 W,-30 V,-0.05 A,R/TP ,High Speed P-ch MOSFET, Pb-free		
6	Q202	TR,BJT,NPN	EQBN0020501	ESM ,0.15 W,R/TP , , ,NPN ,5V ,60V ,50V ,150mA ,0.1uA MAX ,10 MIN 700 MAX ,100mW ,ESM ,R/TP ,3P		
6	Q203	TR,BJT,PNP	EQBP0006301	, W,R/TP ,		
6	Q204	TR,BJT,PNP	EQBP0006301	, W,R/TP ,		
6	Q205	TR,BJT,NPN	EQBN0020501	ESM ,0.15 W,R/TP , , ,NPN ,5V ,60V ,50V ,150mA ,0.1uA MAX ,10 MIN 700 MAX ,100mW ,ESM ,R/TP ,3P		
6	Q301	TR,BJT,NPN	EQBN0019201	VSM ,0.1 W,R/TP ,1.2*1.2*0.5 Vcbo=20, Vceo=12, Vebo=2V, Ic=100mA		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	Q402	TR,FET,N-CHANNEL	EQFN0005601	ESM ,100 mW,30 V,100 mA,R/TP ,		
6	R101	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP,MAKER	ERHZ0000475	3900 ohm,1/16W ,J ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R108	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R207	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	R208	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	R215	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0003001	30 Kohm,1/16W ,F ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R225	RES,CHIP	ERHY0000161	200K ohm,1/16W,F,1005,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R231	RES,CHIP,MAKER	ERHZ0000294	5100 ohm,1/16W ,F ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000211	1200 ohm,1/16W ,F ,1005 ,R/TP		
6	R240	RES,CHIP,MAKER	ERHZ0003001	30 Kohm,1/16W ,F ,1005 ,R/TP		
6	R241	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R242	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R244	RES,CHIP	ERHY0000290	300K ohm,1/16W,J,1005,R/TP		
6	R245	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R246	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R247	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R257	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R260	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R265	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R269	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R270	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R271	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R272	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R273	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R276	RES,CHIP,MAKER	ERHZ0000513	820 ohm,1/16W ,J ,1005 ,R/TP		
6	R277	RES,CHIP	ERHY0000910	10 ohm,1/10W,J,2012,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R307	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R308	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000449	24 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000531	270 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R319	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	R401	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R402	RES,CHIP	ERHY0000128	15K ohm,1/16W,F,1005,R/TP		
6	R404	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R409	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R413	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R414	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000287	47 Kohm,1/16W ,F ,1005 ,R/TP		
6	R420	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R432	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R433	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R434	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R435	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R436	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R437	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R438	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R439	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R441	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R442	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R443	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R444	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R445	RES,CHIP	ERHY0000137	27K ohm,1/16W,F,1005,R/TP		
6	R446	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R447	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R448	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R449	RES,CHIP,MAKER	ERHZ0000435	20 ohm,1/16W ,J ,1005 ,R/TP		
6	R462	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	S401	CONN,SOCKET	ENSY0023801	9,ETC , ,0.95 mm,13.3x13.65x1.65t, Detect Pin		
6	SW301	CONN,RF SWITCH	ENWY0007601	,SMD , dB , ; ,0.40MM ,STRAIGHT ,SOCKET ,SMD ,R/TP ,AU , ,		
6	U101	IC	EUSY0391901	BGA ,10 ,R/TP ,EGV3, ULC GSM one chip, 8x8,183pin ; ,IC,Digital Baseband Processor		
6	U102	IC	EUSY0404201	FBGA ,52 ,ETC ,FULLY 1.8V ADMUX 64M (4Mx16) NOR + 32M (2Mx16) UtRAM2 ; ,IC,MCP		
6	U201	IC	EUSY0347001	MiniQFN-10L ,10 PIN,R/TP ,1.8X1.4X0.55,0.6 Dual SPDT Analog Switch ; ,IC,Analog Switch		
6	U203	IC	EUSY0406901	WLCSP ,20 ,R/TP ,MUIC-Basic, 2X2.5 ; ,IC,Analog Switch		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U204	IC	EUSY0404001	BGA ,8 ,R/TP ,Class AB SPK Amp ; ,IC,Audio Amplifier		
6	U205	IC	EUSY0410801	DFN ,10 ,R/TP ,DFN Cal Test Mode Single Charger IC for Micro USB ; ,IC,Charger		
6	U301	RF MODULE,HANDSET	SMRH0006001	MHz, MHz, ,GSM Dual Band Tx Module for EU. 6x7		
6	U401	IC	EUSY0407201	SSON004 ,4 ,R/TP ,3.3V 150mA Single LDO ; ,IC,LDO Voltage Regulator		
6	U402	IC	EUSY0238704	SC70JW ,10 ,R/TP ,2ch charge pump ; ,IC,Charge Pump		
6	U404	IC	EUSY0416401	DFN ,8 ,R/TP ,300mA/300mA Programmable Dual LDO ; ,IC,LDO Voltage Regulator		
6	U405	IC	EUSY0392201	BGA ,81 ,R/TP ,VGA,USB2.0 ; ,IC,Digital Signal Processors		
6	U406	IC	EUSY0372801	PLP1010 ,4 ,R/TP ,150mA Single LDO ; ,IC,LDO Voltage Regulator		
6	VA203	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA204	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	X101	X-TAL	EXXY0004602	.032768 MHz,20 PPM,12.5 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
6	X102	X-TAL	EXXY0018404	26 MHz,10 PPM,8 pF,40 ohm,SMD ,3.2*2.5*0.6 ,12ppm at -30°C ~ +85°C, C0 1.0pF, C1 3.6pF ; ,26 ,10PPM ,8 , ,SMD ,R/TP		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0140801			
6	BAT1	MODULE,ETC	SMZY0018401	3.3V, Cap(0.07F), Size(Coin, 4.8 x 1.4), Pb-Free ; ,Module Assembly		
6	C131	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C236	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C238	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C239	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C241	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C242	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C243	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C246	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC , 1005 ,R/TP		
6	C258	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC , 1005 ,R/TP		
6	C285	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC , 1005 ,R/TP		
6	C286	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC , 1005 ,R/TP		
6	LD201	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	LD202	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	LD203	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	LD204	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	LD205	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	LD206	DIODE,LED,CHIP	EDLH0015101	BLUE ,1608 ,R/TP ,Topview LED ;; ,BLUE ,2.7~3.2V ,25mA ,18~45mcd ,465~475nm ,95mW ,[empty] ,[empty] ,2P		
6	R210	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R227	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R228	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R278	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R279	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R280	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R281	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R282	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R283	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R284	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R285	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R286	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R287	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY	PCB,MAIN	SPFY0215301	FR-4 ,0.8 mm,BUILD-UP 4 ,GS150(V41) ;,,,,,,,,,,,,,		
6	VA201	VARISTOR	SEVY0003901	5.5 V ,SMD ,Vdc 5.5, Vb 8, Cp 420, 1.0*0.5*0.6 , ,5.5 , ,480 ,1.0*0.5*0.6 ,[empty] ,SMD ,R/TP		
6	VA202	VARISTOR	SEVY0003901	5.5 V ,SMD ,Vdc 5.5, Vb 8, Cp 420, 1.0*0.5*0.6 , ,5.5 , ,480 ,1.0*0.5*0.6 ,[empty] ,SMD ,R/TP		
6	VA205	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA206	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA207	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA208	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA209	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA210	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA211	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA212	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA213	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		
6	VA214	VARISTOR	SEVY0004101	5.6 V ,SMD ,360pF, 1005		

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SUSY00	SPEAKER	SUSY0028904	PIN ,8 ohm,91 dB,1812 mm,3.0t contact ,,,,,,,,,,[empty]		9